Precautions for replacing MR-H series with MR-J4 series

1. OUTLINE

The functions and performance of the MR-J4 series are greatly improved from the MR-H series. The dimensions and mounting dimensions are reduced. However, the wiring method, encoder cable and corresponding motor are different. When replacing, it is recommended to replace the servo amplifier and servo motor as a set.

2. REPLACEMENT MODEL

● This section shows the basic models recommended for replacing the amplifier and motor as a set.

■ Servo amplifier (general-purpose interface)

Series	Production discontinuation time	Model	Example of replacement model	Mounting compatibility (○: Compatible)	Precautions
3-phase 200 V general-purpose interface	Dec. 2005	MR-H10A(N)	MR-J4-10A	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H20A(N)	MR-J4-20A	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H40A(N)	MR-J4-40A	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H60A(N)	MR-J4-40A(Note 1) MR-J4-60A	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H100A(N)	MR-J4-70/100A	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H200A(N)	MR-J4-200A	(Note 2)	Only the depth will increase by 5 mm. However, the mounting area will decrease.
	Dec. 2005	MR-H350A(N)	MR-J4-350A	(Note 2)	Only the depth will increase by 5 mm. However, the mounting area will decrease.
	Dec. 2005	MR-H500A(N)	MR-J4-500A	(Note 2)	Only the depth will increase by 10 mm. However, the mounting area will decrease.
	Dec. 2005	MR-H700A(N)	MR-J4-700A	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H11KA(N)	MR-J4-11KA	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H15KA(N)	MR-J4-15KA	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H22KA(N)	MR-J4-22KA	(Note 2)	The dimensions will decrease.

(Note 1): When the existing servo motor is HA-MH43 or HC-MF43, the capacity of the servo amplifier will be changed.

(Note 2): Refer to <Comparison of servo amplifier dimensions> (page 2) for dimensions of mounting holes.

■ Servo amplifier (SSCNET interface)

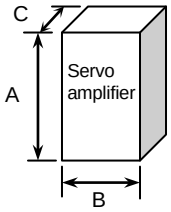
Series	Production discontinuation time	Model	Example of replacement model	Mounting compatibility (○: Compatible)	Precautions
3-phase 200 V general-purpose interface	Dec. 2005	MR-H10B(N)	MR-J4-10B	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H20B(N)	MR-J4-20B	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H40B(N)	MR-J4-40B	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H60B(N)	MR-J4-40B(Note 1) MR-J4-60B	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H100B(N)	MR-J4-70/100B	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H200B(N)	MR-J4-200B	(Note 2)	Only the depth will increase by 5 mm. However, the mounting area will decrease.
	Dec. 2005	MR-H350B(N)	MR-J4-350B	(Note 2)	Only the depth will increase by 5 mm. However, the mounting area will decrease.
	Dec. 2005	MR-H500B(N)	MR-J4-500B	(Note 2)	Only the depth will increase by 10 mm. However, the mounting area will decrease.
	Dec. 2005	MR-H700B(N)	MR-J4-700B	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H11KB(N)	MR-J4-11KB	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H15KB(N)	MR-J4-15KB	(Note 2)	The dimensions will decrease.
	Dec. 2005	MR-H22KB(N)	MR-J4-22KB	(Note 2)	The dimensions will decrease.

(Note 1): When the existing servo motor is HA-MH43 or HC-MF43, the capacity of the servo amplifier will be changed.

(Note 2): Refer to <Comparison of servo amplifier dimensions> (page 2) for dimensions of mounting holes.

<Comparison of servo amplifier dimensions>

Table 1 shows comparison of the MR-H series and MR-J4 series dimensions.
The MR-J4 series have reduced dimensions in comparison with the MR-H series, and replacement can be carried out inside the same cabinet.
However, only the depth of MR-J4-200/350/500A will increase.
(The mounting area will decrease.)
In addition, please note the mounting screw pitch and screw sizes are changed.



Dimensions

■ **Servo amplifier**

<Comparison of dimensions>

MR-H series				Replacement model: MR-J4 series			
Model	A	B	C	Model	A	B	C
MR-H10A(N)/B	250	75	190	MR-J4-10A/B	168	40	135
MR-H20A(N)/B				MR-J4-20A/B			
MR-H40A(N)/B				MR-J4-40A/B	168	40	170
MR-H60A(N)/B				MR-J4-60A/B			
MR-H100A(N)/B	250	85	190	MR-J4-70A/B	168	60	185
				MR-J4-100A/B			
MR-H200A(N)/B	250	135	190	MR-J4-200A/B	168	90	195
MR-H350A(N)/B				MR-J4-350A/B			
MR-H500A(N)/B	350	140	190	MR-J4-500A/B	250	105	200
MR-H700A(N)/B	350	230	247	MR-J4-700A/B	300	172	200
MR-H11KA(N)/B	500	260	260	MR-J4-11KA/B	400	220	260
MR-H15KA(N)/B	500	350	260	MR-J4-15KA/B			
MR-H22KA(N)/B				MR-J4-22KA/B		260	

<Comparison of mounting screw pitches>

MR-H series		MR-J4 series	
Model	Mounting screw pitch	Model	Mounting screw pitch
MR-H10A(N)/B	235 (Vertical) (2 places)	MR-J4-10A/B	156 (Vertical) (2 places)
MR-H20A(N)/B		MR-J4-20A/B	
MR-H40A(N)/B		MR-J4-40A/B	
MR-H60A(N)/B		MR-J4-60A/B	
MR-H100A(N)/B	235 (Vertical) (2 places)	MR-J4-70A/B	156 (Vertical)/ 42 (Horizontal) (3 places)
		MR-J4-100A/B	
MR-H200A(N)/B	235 (Vertical)/ 117 (Horizontal) (4 places)	MR-J4-200A/B	156 (Vertical)/ 78 (Horizontal) (3 places)
MR-H350A(N)/B		MR-J4-350A/B	
MR-H500A(N)/B	330 (Vertical)/ 100 (Horizontal) (4 places)	MR-J4-500A/B	235 (Vertical)/ 93 (Horizontal) (4 places)
MR-H700A(N)/B		MR-J4-700A/B	285 (Vertical)/ 160 (Horizontal) (4 places)
MR-H11KA(N)/B	480 (Vertical)/ 230 (Horizontal) (4 places)	MR-J4-11KA/B	380 (Vertical)/ 196 (Horizontal) (4 places)
MR-H15KA(N)/B		MR-J4-15KA/B	
MR-H22KA(N)/B		MR-J4-22KA/B	376 (Vertical)/ 236 (Horizontal) (4 places)

■ Servo motor

2.1 Servo Motor Replacement Models and Compatibility

This section shows compatibility in mounting of replacement models. For compatibility of servo motor dimensions, reducer specifications, moment of inertia, connector specifications, torque characteristics, refer to "2.2 Comparison of Servo Motor Specifications".

Series	Production discontinuation time	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Small capacity, ultra-low inertia HA-MH series HC-MF series Standard/With brake (B): With brake	Dec. 2005	HA-MH053(B)	HG-MR053(B)	○	• When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-40□ servo amplifier is compatible with HG-MR43.
	Dec. 2005	HC-MF053(B)			
	Dec. 2005	HA-MH13(B)	HG-MR13(B)		
	Dec. 2005	HC-MF13(B)			
	Dec. 2005	HA-MH23(B)	HG-MR23(B)		
	Dec. 2005	HC-MF23(B)			
	Dec. 2005	HA-MH43(B) ◇	HG-MR43(B)		
	Dec. 2005	HC-MF43(B) ◇			
	Dec. 2005	HA-MH73(B)	HG-MR73(B)		
	Dec. 2005	HC-MF73(B)			
Small capacity, ultra-low inertia HC-MF series with general reducer (G1) (B): With brake	Dec. 2005	HC-MF053(B)G1 1/5	HG-KR053(B)G1 1/5	○	• The HG-MR series does not support the geared model. The geared model will be supported with the HG-KR series. • Actual reduction ratio of the reducer marked with ◆ is different. Setting of the electronic gear is required. For details, refer to "2.2.4 Comparison of actual reduction ratios for servo motors with reducer". • When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-40□ servo amplifier is compatible with HG-KR43.
	Dec. 2005	HC-MF053(B)G1 1/12	HG-KR053(B)G1 1/12		
	Dec. 2005	HC-MF053(B)G1 1/20	HG-KR053(B)G1 1/20		
	Dec. 2005	HC-MF13(B)G1 1/5	HG-KR13(B)G1 1/5		
	Dec. 2005	HC-MF13(B)G1 1/12	HG-KR13(B)G1 1/12		
	Dec. 2005	HC-MF13(B)G1 1/20	HG-KR13(B)G1 1/20		
	Dec. 2005	HC-MF23(B)G1 1/5	HG-KR23(B)G1 1/5		
	Dec. 2005	HC-MF23(B)G1 1/12	HG-KR23(B)G1 1/12 ◆		
	Dec. 2005	HC-MF23(B)G1 1/20	HG-KR23(B)G1 1/20 ◆		
	Dec. 2005	HC-MF43(B)G1 1/5 ◇	HG-KR43(B)G1 1/5		
	Dec. 2005	HC-MF43(B)G1 1/12 ◇	HG-KR43(B)G1 1/12 ◆		
	Dec. 2005	HC-MF43(B)G1 1/20 ◇	HG-KR43(B)G1 1/20 ◆		
	Dec. 2005	HC-MF73(B)G1 1/5	HG-KR73(B)G1 1/5		
	Dec. 2005	HC-MF73(B)G1 1/12	HG-KR73(B)G1 1/12 ◆		
	Dec. 2005	HC-MF73(B)G1 1/20	HG-KR73(B)G1 1/20		
Small capacity, ultra-low inertia HA-MH series with high precision reducer (G) HC-MF series with high precision reducer (G2) (B): With brake	Dec. 2005	HA-MH053(B)G 1/5	HG-KR053(B)G7 1/5	(Note 1)	• The HG-MR series does not support the geared model. The geared model will be supported with the HG-KR series. • When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-40□ servo amplifier is compatible with HG-KR43.
	Dec. 2005	HC-MF053(B)G2 1/5			
	Dec. 2005	HA-MH053(B)G 1/9	HG-KR053(B)G7 1/11		
	Dec. 2005	HC-MF053(B)G2 1/9			
	Dec. 2005	HA-MH053(B)G 1/20	HG-KR053(B)G7 1/21		
	Dec. 2005	HC-MF053(B)G2 1/20			
	Dec. 2005	HA-MH053(B)G 1/29	HG-KR053(B)G7 1/33		
	Dec. 2005	HC-MF053(B)G2 1/29			
	Dec. 2005	HA-MH13(B)G 1/5	HG-KR13(B)G7 1/5		
	Dec. 2005	HC-MF13(B)G2 1/5			
	Dec. 2005	HA-MH13(B)G 1/9	HG-KR13(B)G7 1/11		
	Dec. 2005	HC-MF13(B)G2 1/9			
	Dec. 2005	HA-MH13(B)G 1/20	HG-KR13(B)G7 1/21		
	Dec. 2005	HC-MF13(B)G2 1/20			
	Dec. 2005	HA-MH13(B)G2 1/29	HG-KR13(B)G7 1/33		
	Dec. 2005	HC-MF13(B)G2 1/29			
	Dec. 2005	HA-MH23(B)G 1/5	HG-KR23(B)G7 1/5		
	Dec. 2005	HC-MF23(B)G2 1/5			
	Dec. 2005	HA-MH23(B)G2 1/9	HG-KR23(B)G7 1/11		
	Dec. 2005	HC-MF23(B)G2 1/9			
	Dec. 2005	HA-MH23(B)G 1/20	HG-KR23(B)G7 1/21		
	Dec. 2005	HC-MF23(B)G2 1/20			
	Dec. 2005	HA-MH23(B)G2 1/29	HG-KR23(B)G7 1/33		
	Dec. 2005	HC-MF23(B)G2 1/29			
	Dec. 2005	HA-MH43(B)G 1/5 ◇	HG-KR43(B)G7 1/5		
	Dec. 2005	HC-MF43(B)G2 1/5 ◇			
	Dec. 2005	HA-MH43(B)G2 1/9 ◇	HG-KR43(B)G7 1/11		
	Dec. 2005	HC-MF43(B)G2 1/9 ◇			
	Dec. 2005	HA-MH43(B)G 1/20 ◇	HG-KR43(B)G7 1/21		
	Dec. 2005	HC-MF43(B)G2 1/20 ◇			
	Dec. 2005	HA-MH43(B)G2 1/29 ◇	HG-KR43(B)G7 1/33		
	Dec. 2005	HC-MF43(B)G2 1/29 ◇			
	Dec. 2005	HA-MH73(B)G 1/5	HG-KR73(B)G7 1/5		
	Dec. 2005	HC-MF73(B)G2 1/5			
	Dec. 2005	HA-MH73(B)G2 1/9	HG-KR73(B)G7 1/11		
	Dec. 2005	HC-MF73(B)G2 1/9			
	Dec. 2005	HA-MH73(B)G 1/20	HG-KR73(B)G7 1/21		
	Dec. 2005	HC-MF73(B)G2 1/20			
	Dec. 2005	HA-MH73(B)G2 1/29	HG-KR73(B)G7 1/33		
	Dec. 2005	HC-MF73(B)G2 1/29			

Note 1: For mounting dimensions, refer to "2.2.3 Comparison of mounting dimensions for servo motors with reducer".

Note 2: The power supply and encoder connector will be changed. For details, refer to "2.2.6 Comparison of servo motor connector specifications".

Series	Production discontinuation time	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Small capacity, low inertia HA-FH series HA-FF series Standard/With brake (B): With brake	Dec. 2005	HA-FH053(B)	HG-KR053(B)	(Note 1)	• When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-70☐ servo amplifier is compatible with HG-KR73.
	Dec. 2005	HA-FF053(B)			
	Dec. 2005	HA-FH13(B)	HG-KR13(B)		
	Dec. 2005	HA-FF13(B)			
	Dec. 2005	HA-FH23(B)	HG-KR23(B)		
	Dec. 2005	HA-FF23(B)			
	Dec. 2005	HA-FH33(B)	HG-KR43(B)		
	Dec. 2005	HA-FF33(B)			
	Dec. 2005	HA-FH43(B)			
	Dec. 2005	HA-FF43(B)			
	Dec. 2005	HA-FH63(B) ◇	HG-KR73(B)		
	Dec. 2005	HA-FF63(B) ◇			
Small capacity, low inertia HA-FH series with general reducer (G) HA-FF series with general reducer (G1) (B): With brake	Dec. 2005	HA-FH053(B)G 1/5	HG-KR053(B)G1 1/5	(Note 1)	• Actual reduction ratio of the reducer marked with ◆ is different. Setting of the electronic gear is required. For details, refer to "2.2.4 Comparison of actual reduction ratios for servo motors with reducer". • The reduction ratio of the reducer marked with ● is remarkably different. Check the output torque. • When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-70☐ servo amplifier is compatible with HG-KR73.
	Dec. 2005	HA-FF053(B)G1 1/5			
	Dec. 2005	HA-FH053(B)G 1/10	HG-KR053(B)G1 1/12		
	Dec. 2005	HA-FF053(B)G1 1/10			
	Dec. 2005	HA-FH053(B)G 1/20	HG-KR053(B)G1 1/20 ◆		
	Dec. 2005	HA-FF053(B)G1 1/20			
	Dec. 2005	HA-FH053(B)G 1/30	HG-KR053(B)G1 1/20 ●		
	Dec. 2005	HA-FF053(B)G1 1/30			
	Dec. 2005	HA-FH13(B)G 1/5	HG-KR13(B)G1 1/5		
	Dec. 2005	HA-FF13(B)G1 1/5			
	Dec. 2005	HA-FH13(B)G 1/10	HG-KR13(B)G1 1/12		
	Dec. 2005	HA-FF13(B)G1 1/10			
	Dec. 2005	HA-FH13(B)G 1/20	HG-KR13(B)G1 1/20 ◆		
	Dec. 2005	HA-FF13(B)G1 1/20			
	Dec. 2005	HA-FH13(B)G 1/30	HG-KR13(B)G1 1/20 ●		
	Dec. 2005	HA-FF13(B)G1 1/30			
	Dec. 2005	HA-FH23(B)G 1/5	HG-KR23(B)G1 1/5 ◆		
	Dec. 2005	HA-FF23(B)G1 1/5			
	Dec. 2005	HA-FH23(B)G 1/10	HG-KR23(B)G1 1/12		
	Dec. 2005	HA-FF23(B)G1 1/10			
	Dec. 2005	HA-FH23(B)G 1/20	HG-KR23(B)G1 1/20 ◆		
	Dec. 2005	HA-FF23(B)G1 1/20			
	Dec. 2005	HA-FH23(B)G 1/30	HG-KR23(B)G1 1/20 ●		
	Dec. 2005	HA-FF23(B)G1 1/30			
	Dec. 2005	HA-FH33(B)G 1/5	HG-KR43(B)G1 1/5 ◆		
	Dec. 2005	HA-FF33(B)G1 1/5			
	Dec. 2005	HA-FH33(B)G 1/10	HG-KR43(B)G1 1/12		
	Dec. 2005	HA-FF33(B)G1 1/10			
	Dec. 2005	HA-FH33(B)G 1/20	HG-KR43(B)G1 1/20 ◆		
	Dec. 2005	HA-FF33(B)G1 1/20			
	Dec. 2005	HA-FH33(B)G 1/30	HG-KR43(B)G1 1/20 ●		
	Dec. 2005	HA-FF33(B)G1 1/30			
	Dec. 2005	HA-FH43(B)G 1/5	HG-KR43(B)G1 1/5 ◆		
	Dec. 2005	HA-FF43(B)G1 1/5			
	Dec. 2005	HA-FH43(B)G 1/10	HG-KR43(B)G1 1/12		
	Dec. 2005	HA-FF43(B)G1 1/10			
	Dec. 2005	HA-FH43(B)G 1/20	HG-KR43(B)G1 1/20 ◆		
	Dec. 2005	HA-FF43(B)G1 1/20			
	Dec. 2005	HA-FH43(B)G 1/30	HG-KR43(B)G1 1/20 ●		
	Dec. 2005	HA-FF43(B)G1 1/30			
	Dec. 2005	HA-FH63(B)G 1/5 ◇	HG-KR73(B)G1 1/5 ◆		
	Dec. 2005	HA-FF63(B)G1 1/5 ◇			
	Dec. 2005	HA-FH63(B)G 1/10 ◇	HG-KR73(B)G1 1/12		
	Dec. 2005	HA-FF63(B)G1 1/10 ◇			
	Dec. 2005	HA-FH63(B)G 1/20 ◇	HG-KR73(B)G1 1/20 ◆		
	Dec. 2005	HA-FF63(B)G1 1/20 ◇			
	Dec. 2005	HA-FH63(B)G 1/30 ◇	HG-KR73(B)G1 1/20 ●		
	Dec. 2005	HA-FF63(B)G1 1/30 ◇			

Note 1: Refer to "2.2.2 Detailed comparison of servo motor mounting dimensions"
and "2.2.3 Comparison of mounting dimensions for servo motors with reducer" for mounting dimensions.

Note 2: The power supply and encoder connector will be changed. For details, refer to "2.2.6 Comparison of servo motor connector specifications".

Series	Production discontinuation time	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Small capacity, low inertia HA-FH series with high precision reducer (G) HA-FF series with high precision reducer (G2) (B): With brake	Dec. 2005	HA-FH053(B)G 1/5	HG-KR053(B)G7 1/5	(Note 1)	• When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-70☐ servo amplifier is compatible with HG-KR73.
	Dec. 2005	HA-FF053(B)G2 1/5			
	Dec. 2005	HA-FH053(B)G 1/10	HG-KR053(B)G7 1/11		
	Dec. 2005	HA-FF053(B)G2 1/10			
	Dec. 2005	HA-FH053(B)G 1/15	HG-KR053(B)G7 1/21		
	Dec. 2005	HA-FF053(B)G2 1/15			
	Dec. 2005	HA-FH053(B)G 1/25	HG-KR053(B)G7 1/33		
	Dec. 2005	HA-FF053(B)G2 1/25			
	Dec. 2005	HA-FH13(B)G 1/5	HG-KR13(B)G7 1/5		
	Dec. 2005	HA-FF13(B)G2 1/5			
	Dec. 2005	HA-FH13(B)G 1/10	HG-KR13(B)G7 1/11		
	Dec. 2005	HA-FF13(B)G2 1/10			
	Dec. 2005	HA-FH13(B)G 1/15	HG-KR13(B)G7 1/21		
	Dec. 2005	HA-FF13(B)G2 1/15			
	Dec. 2005	HA-FH13(B)G 1/25	HG-KR13(B)G7 1/33		
	Dec. 2005	HA-FF13(B)G2 1/25			
	Dec. 2005	HA-FH13(B)G 1/45	HG-KR13(B)G7 1/45		
	Dec. 2005	HA-FF13(B)G2 1/45			
	Dec. 2005	HA-FH23(B)G 1/5	HG-KR23(B)G7 1/5		
	Dec. 2005	HA-FF23(B)G2 1/5			
	Dec. 2005	HA-FH23(B)G 1/10	HG-KR23(B)G7 1/11		
	Dec. 2005	HA-FF23(B)G2 1/10			
	Dec. 2005	HA-FH23(B)G 1/15	HG-KR23(B)G7 1/21		
	Dec. 2005	HA-FF23(B)G2 1/15			
	Dec. 2005	HA-FH23(B)G 1/20			
	Dec. 2005	HA-FF23(B)G2 1/20			
	Dec. 2005	HA-FH23(B)G 1/29	HG-KR23(B)G7 1/33		
	Dec. 2005	HA-FF23(B)G2 1/29			
	Dec. 2005	HA-FH23(B)G 1/45	HG-KR23(B)G7 1/45		
	Dec. 2005	HA-FF23(B)G2 1/45			
	Dec. 2005	HA-FH33(B)G 1/5	HG-KR43(B)G7 1/5		
	Dec. 2005	HA-FF33(B)G2 1/5			
	Dec. 2005	HA-FH33(B)G 1/10	HG-KR43(B)G7 1/11		
	Dec. 2005	HA-FF33(B)G2 1/10			
	Dec. 2005	HA-FH33(B)G 1/20	HG-KR43(B)G7 1/21		
	Dec. 2005	HA-FF33(B)G2 1/20			
	Dec. 2005	HA-FH33(B)G 1/29	HG-KR43(B)G7 1/33		
	Dec. 2005	HA-FF33(B)G2 1/29			
	Dec. 2005	HA-FH33(B)G 1/45	HG-KR43(B)G7 1/45		
	Dec. 2005	HA-FF33(B)G2 1/45			
	Dec. 2005	HA-FH43(B)G 1/5	HG-KR43(B)G7 1/5		
	Dec. 2005	HA-FF43(B)G2 1/5			
	Dec. 2005	HA-FH43(B)G 1/9	HG-KR43(B)G7 1/11		
	Dec. 2005	HA-FF43(B)G2 1/9			
	Dec. 2005	HA-FH43(B)G 1/20	HG-KR43(B)G7 1/21		
	Dec. 2005	HA-FF43(B)G2 1/20			
	Dec. 2005	HA-FH43(B)G 1/29	HG-KR43(B)G7 1/33		
	Dec. 2005	HA-FF43(B)G2 1/29			
	Dec. 2005	HA-FH43(B)G 1/45	HG-KR43(B)G7 1/45		
	Dec. 2005	HA-FF43(B)G2 1/45			
	Dec. 2005	HA-FH63(B)G 1/5 ◇	HG-KR73(B)G7 1/5		
	Dec. 2005	HA-FF63(B)G2 1/5 ◇			
	Dec. 2005	HA-FH63(B)G 1/9 ◇	HG-KR73(B)G7 1/11		
	Dec. 2005	HA-FF63(B)G2 1/9 ◇			
	Dec. 2005	HA-FH63(B)G 1/20 ◇	HG-KR73(B)G7 1/21		
	Dec. 2005	HA-FF63(B)G2 1/20 ◇			
	Dec. 2005	HA-FH63(B)G 1/29 ◇	HG-KR73(B)G7 1/33		
	Dec. 2005	HA-FF63(B)G2 1/29 ◇			
	Dec. 2005	HA-FH63(B)G 1/45 ◇	HG-KR73(B)G7 1/45		
	Dec. 2005	HA-FF63(B)G2 1/45 ◇			

Note 1: For mounting dimensions, refer to "2.2.3 Comparison of mounting dimensions for servo motors with reducer".

Note 2: The power supply and encoder connector will be changed. For details, refer to "2.2.6 Comparison of servo motor connector specifications".

Series	Production discontinuation time	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Medium capacity, medium inertia HA-SH series Standard/With brake (B): With brake	Dec. 2005	HA-SH81(B)	HG-SR81(B)	○	• The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side. • The HG-SR servo motor does not have an oil seal. Use HG-SR□J when an oil seal is required.
	Dec. 2005	HA-SH121(B)	HG-SR121(B)		
	Dec. 2005	HA-SH201(B)	HG-SR201(B)		
	Dec. 2005	HA-SH301(B)	HG-SR301(B)		
	Dec. 2005	HA-SH52(B)	HG-SR52(B)		
	Dec. 2005	HA-SH102(B)	HG-SR102(B)		
	Dec. 2005	HA-SH152(B)	HG-SR152(B)		
	Dec. 2005	HA-SH202(B)	HG-SR202(B)		
	Dec. 2005	HA-SH352(B)	HG-SR352(B)		
	Dec. 2005	HA-SH502(B)	HG-SR502(B)		
	Dec. 2005	HA-SH702(B)	HG-SR702(B)		
	Dec. 2005	HA-SH53(B)	HG-SR52(B)		
	Dec. 2005	HA-SH103(B)	HG-SR102(B)		
	Dec. 2005	HA-SH153(B)	HG-SR152(B)		
	Dec. 2005	HA-SH203(B)	HG-SR202(B)		
	Dec. 2005	HA-SH353(B)	HG-SR352(B)		
Medium capacity, medium inertia HA-SH series with general reducer (G) (B): With brake G1: Flange-mounting G1H: Foot-mounting	Dec. 2005	HA-SH52(B)G 1/6	HG-SR52(B)G1(H) 1/6	○	• The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	Dec. 2005	HA-SH52(B)G 1/11	HG-SR52(B)G1(H) 1/11		
	Dec. 2005	HA-SH52(B)G 1/17	HG-SR52(B)G1(H) 1/17		
	Dec. 2005	HA-SH52(B)G 1/29	HG-SR52(B)G1(H) 1/29		
	Dec. 2005	HA-SH52(B)G 1/35	HG-SR52(B)G1(H) 1/35		
	Dec. 2005	HA-SH52(B)G 1/43	HG-SR52(B)G1(H) 1/43		
	Dec. 2005	HA-SH52(B)G 1/59	HG-SR52(B)G1(H) 1/59		
	Dec. 2005	HA-SH102(B)G 1/6	HG-SR102(B)G1(H) 1/6		
	Dec. 2005	HA-SH102(B)G 1/11	HG-SR102(B)G1(H) 1/11		
	Dec. 2005	HA-SH102(B)G 1/17	HG-SR102(B)G1(H) 1/17		
	Dec. 2005	HA-SH102(B)G 1/29	HG-SR102(B)G1(H) 1/29		
	Dec. 2005	HA-SH102(B)G 1/35	HG-SR102(B)G1(H) 1/35		
	Dec. 2005	HA-SH102(B)G 1/43	HG-SR102(B)G1(H) 1/43		
	Dec. 2005	HA-SH102(B)G 1/59	HG-SR102(B)G1(H) 1/59		
	Dec. 2005	HA-SH152(B)G 1/6	HG-SR152(B)G1(H) 1/6		
	Dec. 2005	HA-SH152(B)G 1/11	HG-SR152(B)G1(H) 1/11		
	Dec. 2005	HA-SH152(B)G 1/17	HG-SR152(B)G1(H) 1/17		
	Dec. 2005	HA-SH152(B)G 1/29	HG-SR152(B)G1(H) 1/29		
	Dec. 2005	HA-SH152(B)G 1/35	HG-SR152(B)G1(H) 1/35		
	Dec. 2005	HA-SH152(B)G 1/43	HG-SR152(B)G1(H) 1/43		
	Dec. 2005	HA-SH152(B)G 1/59	HG-SR152(B)G1(H) 1/59		
	Dec. 2005	HA-SH202(B)G 1/6	HG-SR202(B)G1(H) 1/6		
	Dec. 2005	HA-SH202(B)G 1/11	HG-SR202(B)G1(H) 1/11		
	Dec. 2005	HA-SH202(B)G 1/17	HG-SR202(B)G1(H) 1/17		
	Dec. 2005	HA-SH202(B)G 1/29	HG-SR202(B)G1(H) 1/29		
	Dec. 2005	HA-SH202(B)G 1/35	HG-SR202(B)G1(H) 1/35		
	Dec. 2005	HA-SH202(B)G 1/43	HG-SR202(B)G1(H) 1/43		
	Dec. 2005	HA-SH202(B)G 1/59	HG-SR202(B)G1(H) 1/59		
	Dec. 2005	HA-SH352(B)G 1/6	HG-SR352(B)G1(H) 1/6		
	Dec. 2005	HA-SH352(B)G 1/11	HG-SR352(B)G1(H) 1/11		
	Dec. 2005	HA-SH352(B)G 1/17	HG-SR352(B)G1(H) 1/17		
	Dec. 2005	HA-SH352(B)G 1/29	HG-SR352(B)G1(H) 1/29		
	Dec. 2005	HA-SH352(B)G 1/35	HG-SR352(B)G1(H) 1/35		
	Dec. 2005	HA-SH352(B)G 1/43	HG-SR352(B)G1(H) 1/43		
	Dec. 2005	HA-SH352(B)G 1/59	HG-SR352(B)G1(H) 1/59		

Note 1: The power supply and encoder connector will be changed. For details, refer to "2.2.6 Comparison of servo motor connector specifications".

Series	Production discontinuation time	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Medium capacity, medium inertia HA-SH series with general reducer (G) (B): With brake G1: Flange-mounting G1H: Foot-mounting	Dec. 2005	HA-SH502(B)G 1/6	HG-SR502(B)G1(H) 1/6	○	• The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	Dec. 2005	HA-SH502(B)G 1/11	HG-SR502(B)G1(H) 1/11		
	Dec. 2005	HA-SH502(B)G 1/17	HG-SR502(B)G1(H) 1/17		
	Dec. 2005	HA-SH502(B)G 1/29	HG-SR502(B)G1(H) 1/29		
	Dec. 2005	HA-SH502(B)G 1/35	HG-SR502(B)G1(H) 1/35		
	Dec. 2005	HA-SH502(B)G 1/43	HG-SR502(B)G1(H) 1/43		
	Dec. 2005	HA-SH502(B)G 1/59	HG-SR502(B)G1(H) 1/59		
	Dec. 2005	HA-SH702(B)G 1/6	HG-SR702(B)G1(H) 1/6		
	Dec. 2005	HA-SH702(B)G 1/11	HG-SR702(B)G1(H) 1/11		
	Dec. 2005	HA-SH702(B)G 1/17	HG-SR702(B)G1(H) 1/17		
	Dec. 2005	HA-SH702(B)G 1/29	HG-SR702(B)G1(H) 1/29		
	Dec. 2005	HA-SH702(B)G 1/35	HG-SR702(B)G1(H) 1/35		
	Dec. 2005	HA-SH702(B)G 1/43	HG-SR702(B)G1(H) 1/43		
	Dec. 2005	HA-SH702(B)G 1/59	HG-SR702(B)G1(H) 1/59		
Medium capacity, medium inertia HA-SH series with high precision reducer (G) (B): With brake	Dec. 2005	HA-SH52(B)G 1/5	HG-SR52(B)G7 1/5	(Note 1)	• The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	Dec. 2005	HA-SH52(B)G 1/9	HG-SR52(B)G7 1/11		
	Dec. 2005	HA-SH52(B)G 1/20	HG-SR52(B)G7 1/21		
	Dec. 2005	HA-SH52(B)G 1/29	HG-SR52(B)G7 1/33		
	Dec. 2005	HA-SH52(B)G 1/45	HG-SR52(B)G7 1/45		
	Dec. 2005	HA-SH102(B)G 1/5	HG-SR102(B)G7 1/5		
	Dec. 2005	HA-SH102(B)G 1/9	HG-SR102(B)G7 1/11		
	Dec. 2005	HA-SH102(B)G 1/20	HG-SR102(B)G7 1/21		
	Dec. 2005	HA-SH102(B)G 1/29	HG-SR102(B)G7 1/33		
	Dec. 2005	HA-SH102(B)G 1/45	HG-SR102(B)G7 1/45		
	Dec. 2005	HA-SH152(B)G 1/5	HG-SR152(B)G7 1/5		
	Dec. 2005	HA-SH152(B)G 1/9	HG-SR152(B)G7 1/11		
	Dec. 2005	HA-SH152(B)G 1/20	HG-SR152(B)G7 1/21		
	Dec. 2005	HA-SH152(B)G 1/29	HG-SR152(B)G7 1/33		
	Dec. 2005	HA-SH152(B)G 1/45	HG-SR152(B)G7 1/45		
	Dec. 2005	HA-SH202(B)G 1/5	HG-SR202(B)G7 1/5		
	Dec. 2005	HA-SH202(B)G 1/9	HG-SR202(B)G7 1/11		
	Dec. 2005	HA-SH202(B)G 1/20	HG-SR202(B)G7 1/21		
	Dec. 2005	HA-SH202(B)G 1/29	HG-SR202(B)G7 1/33		
	Dec. 2005	HA-SH202(B)G 1/45	HG-SR202(B)G7 1/45		
	Dec. 2005	HA-SH352(B)G 1/5	HG-SR352(B)G7 1/5		
	Dec. 2005	HA-SH352(B)G 1/9	HG-SR352(B)G7 1/11		
	Dec. 2005	HA-SH352(B)G 1/20	HG-SR352(B)G7 1/21		
	Dec. 2005	HA-SH502(B)G 1/5	HG-SR502(B)G7 1/5		
	Dec. 2005	HA-SH502(B)G 1/9	HG-SR502(B)G7 1/11		
	Dec. 2005	HA-SH702(B)G 1/5	HG-SR702(B)G7 1/5		
Medium capacity, medium inertia HC-SF series Standard/With brake (B): With brake	Dec. 2005	HC-SF81(B)	HG-SR81(B)	○	• The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the equipment side. • The HG-SR servo motor does not have an oil seal. Use HG-SR□J when an oil seal is required.
	Dec. 2005	HC-SF121(B)	HG-SR121(B)		
	Dec. 2005	HC-SF201(B)	HG-SR201(B)		
	Dec. 2005	HC-SF301(B)	HG-SR301(B)		
	Dec. 2005	HC-SF52(B)	HG-SR52(B)		
	Dec. 2005	HC-SF102(B)	HG-SR102(B)		
	Dec. 2005	HC-SF152(B)	HG-SR152(B)		
	Dec. 2005	HC-SF202(B)	HG-SR202(B)		
	Dec. 2005	HC-SF352(B)	HG-SR352(B)		
	Dec. 2005	HC-SF502(B)	HG-SR502(B)		
	Dec. 2005	HC-SF702(B)	HG-SR702(B)		
	Dec. 2005	HC-SF53(B)	HG-SR52(B)		
	Dec. 2005	HC-SF103(B)	HG-SR102(B)		
	Dec. 2005	HC-SF153(B)	HG-SR152(B)		
	Dec. 2005	HC-SF203(B)	HG-SR202(B)		
	Dec. 2005	HC-SF353(B)	HG-SR352(B)		

Note 1: For mounting dimensions, refer to "2.2.3 Comparison of mounting dimensions for servo motors with reducer".

Note 2: The power supply and encoder connector will be changed. For details, refer to "2.2.6 Comparison of servo motor connector specifications".

Series	Production discontinuation time	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Medium capacity, medium inertia HC-SF series with general reducer (G1) (B): With brake G1: Flange-mounting G1H: Foot-mounting	Dec. 2005	HC-SF52(B)G1(H) 1/6	HG-SR52(B)G1(H) 1/6	○	• The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the equipment side.
	Dec. 2005	HC-SF52(B)G1(H) 1/11	HG-SR52(B)G1(H) 1/11		
	Dec. 2005	HC-SF52(B)G1(H) 1/17	HG-SR52(B)G1(H) 1/17		
	Dec. 2005	HC-SF52(B)G1(H) 1/29	HG-SR52(B)G1(H) 1/29		
	Dec. 2005	HC-SF52(B)G1(H) 1/35	HG-SR52(B)G1(H) 1/35		
	Dec. 2005	HC-SF52(B)G1(H) 1/43	HG-SR52(B)G1(H) 1/43		
	Dec. 2005	HC-SF52(B)G1(H) 1/59	HG-SR52(B)G1(H) 1/59		
	Dec. 2005	HC-SF102(B)G1(H) 1/6	HG-SR102(B)G1(H) 1/6		
	Dec. 2005	HC-SF102(B)G1(H) 1/11	HG-SR102(B)G1(H) 1/11		
	Dec. 2005	HC-SF102(B)G1(H) 1/17	HG-SR102(B)G1(H) 1/17		
	Dec. 2005	HC-SF102(B)G1(H) 1/29	HG-SR102(B)G1(H) 1/29		
	Dec. 2005	HC-SF102(B)G1(H) 1/35	HG-SR102(B)G1(H) 1/35		
	Dec. 2005	HC-SF102(B)G1(H) 1/43	HG-SR102(B)G1(H) 1/43		
	Dec. 2005	HC-SF102(B)G1(H) 1/59	HG-SR102(B)G1(H) 1/59		
	Dec. 2005	HC-SF152(B)G1(H) 1/6	HG-SR152(B)G1(H) 1/6		
	Dec. 2005	HC-SF152(B)G1(H) 1/11	HG-SR152(B)G1(H) 1/11		
	Dec. 2005	HC-SF152(B)G1(H) 1/17	HG-SR152(B)G1(H) 1/17		
	Dec. 2005	HC-SF152(B)G1(H) 1/29	HG-SR152(B)G1(H) 1/29		
	Dec. 2005	HC-SF152(B)G1(H) 1/35	HG-SR152(B)G1(H) 1/35		
	Dec. 2005	HC-SF152(B)G1(H) 1/43	HG-SR152(B)G1(H) 1/43		
	Dec. 2005	HC-SF152(B)G1(H) 1/59	HG-SR152(B)G1(H) 1/59		
	Dec. 2005	HC-SF202(B)G1(H) 1/6	HG-SR202(B)G1(H) 1/6		
	Dec. 2005	HC-SF202(B)G1(H) 1/11	HG-SR202(B)G1(H) 1/11		
	Dec. 2005	HC-SF202(B)G1(H) 1/17	HG-SR202(B)G1(H) 1/17		
	Dec. 2005	HC-SF202(B)G1(H) 1/29	HG-SR202(B)G1(H) 1/29		
	Dec. 2005	HC-SF202(B)G1(H) 1/35	HG-SR202(B)G1(H) 1/35		
	Dec. 2005	HC-SF202(B)G1(H) 1/43	HG-SR202(B)G1(H) 1/43		
	Dec. 2005	HC-SF202(B)G1(H) 1/59	HG-SR202(B)G1(H) 1/59		
	Dec. 2005	HC-SF352(B)G1(H) 1/6	HG-SR352(B)G1(H) 1/6		
	Dec. 2005	HC-SF352(B)G1(H) 1/11	HG-SR352(B)G1(H) 1/11		
	Dec. 2005	HC-SF352(B)G1(H) 1/17	HG-SR352(B)G1(H) 1/17		
	Dec. 2005	HC-SF352(B)G1(H) 1/29	HG-SR352(B)G1(H) 1/29		
	Dec. 2005	HC-SF352(B)G1(H) 1/35	HG-SR352(B)G1(H) 1/35		
	Dec. 2005	HC-SF352(B)G1(H) 1/43	HG-SR352(B)G1(H) 1/43		
	Dec. 2005	HC-SF352(B)G1(H) 1/59	HG-SR352(B)G1(H) 1/59		
	Dec. 2005	HC-SF502(B)G1(H) 1/11	HG-SR502(B)G1(H) 1/11		
	Dec. 2005	HC-SF502(B)G1(H) 1/17	HG-SR502(B)G1(H) 1/17		
	Dec. 2005	HC-SF502(B)G1(H) 1/29	HG-SR502(B)G1(H) 1/29		
	Dec. 2005	HC-SF502(B)G1(H) 1/35	HG-SR502(B)G1(H) 1/35		
	Dec. 2005	HC-SF502(B)G1(H) 1/43	HG-SR502(B)G1(H) 1/43		
	Dec. 2005	HC-SF702(B)G1(H) 1/11	HG-SR702(B)G1(H) 1/11		
	Dec. 2005	HC-SF702(B)G1(H) 1/17	HG-SR702(B)G1(H) 1/17		
	Dec. 2005	HC-SF702(B)G1(H) 1/29	HG-SR702(B)G1(H) 1/29		
	Dec. 2005	HC-SF702(B)G1(H) 1/35	HG-SR702(B)G1(H) 1/35		
	Dec. 2005	HC-SF702(B)G1(H) 1/43	HG-SR702(B)G1(H) 1/43		

Note 1: The power supply and encoder connector will be changed. For details, refer to "2.2.6 Comparison of servo motor connector specifications".

Series	Production discontinuation time	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Medium capacity, medium inertia HC-SF series with high precision reducer (G2) (B): With brake	Dec. 2005	HC-SF52(B)G2 1/5	HG-SR52(B)G7 1/5	(Note 1)	• The total length of the motor will be shorter, so confirm that the motor connector does not interfere with the device side.
	Dec. 2005	HC-SF52(B)G2 1/9	HG-SR52(B)G7 1/11		
	Dec. 2005	HC-SF52(B)G2 1/20	HG-SR52(B)G7 1/21		
	Dec. 2005	HC-SF52(B)G2 1/29	HG-SR52(B)G7 1/33		
	Dec. 2005	HC-SF52(B)G2 1/45	HG-SR52(B)G7 1/45		
	Dec. 2005	HC-SF102(B)G2 1/5	HG-SR102(B)G7 1/5		
	Dec. 2005	HC-SF102(B)G2 1/9	HG-SR102(B)G7 1/11		
	Dec. 2005	HC-SF102(B)G2 1/20	HG-SR102(B)G7 1/21		
	Dec. 2005	HC-SF102(B)G2 1/29	HG-SR102(B)G7 1/33		
	Dec. 2005	HC-SF102(B)G2 1/45	HG-SR102(B)G7 1/45		
	Dec. 2005	HC-SF152(B)G2 1/5	HG-SR152(B)G7 1/5		
	Dec. 2005	HC-SF152(B)G2 1/9	HG-SR152(B)G7 1/11		
	Dec. 2005	HC-SF152(B)G2 1/20	HG-SR152(B)G7 1/21		
	Dec. 2005	HC-SF152(B)G2 1/29	HG-SR152(B)G7 1/33		
	Dec. 2005	HC-SF152(B)G2 1/45	HG-SR152(B)G7 1/45		
	Dec. 2005	HC-SF202(B)G2 1/5	HG-SR202(B)G7 1/5		
	Dec. 2005	HC-SF202(B)G2 1/9	HG-SR202(B)G7 1/11		
	Dec. 2005	HC-SF202(B)G2 1/20	HG-SR202(B)G7 1/21		
	Dec. 2005	HC-SF202(B)G2 1/29	HG-SR202(B)G7 1/33		
	Dec. 2005	HC-SF202(B)G2 1/45	HG-SR202(B)G7 1/45		
	Dec. 2005	HC-SF352(B)G2 1/5	HG-SR352(B)G7 1/5		
	Dec. 2005	HC-SF352(B)G2 1/9	HG-SR352(B)G7 1/11		
	Dec. 2005	HC-SF352(B)G2 1/20	HG-SR352(B)G7 1/21		
	Dec. 2005	HC-SF502(B)G2 1/5	HG-SR502(B)G7 1/5		
	Dec. 2005	HC-SF502(B)G2 1/9	HG-SR502(B)G7 1/11		
	Dec. 2005	HC-SF702(B)G2 1/5	HG-SR702(B)G7 1/5		
Medium capacity, ultra-low inertia HC-RF series Standard/With brake (B): With brake	Dec. 2005	HC-RF103(B)	HG-RR103(B)	○	
	Dec. 2005	HC-RF153(B)	HG-RR153(B)		
	Dec. 2005	HC-RF203(B)	HG-RR203(B)		
	Dec. 2005	HC-RF353(B)	HG-RR353(B)		
	Dec. 2005	HC-RF503(B)	HG-RR503(B)		
Medium capacity, medium inertia HC-SF series with high precision reducer (G2) (B): With brake	Dec. 2005	HC-RF103(B)G2 1/5 ◇	HG-SR102(B)G7 1/5	(Note 1)	• The HG-RR series does not support the geared model. The geared model will be supported with the HG-SR series. • The reduction ratio of the reducer marked with ◆ is remarkably different. Check the output torque. • When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-100□ servo amplifier is compatible with HG-SR102, the MR-J4-200□ servo amplifier is compatible with HG-SR202, and MR-J4-350□ servo amplifier is compatible with HG-SR352.
	Dec. 2005	HC-RF103(B)G2 1/9 ◇	HG-SR102(B)G7 1/11		
	Dec. 2005	HC-RF103(B)G2 1/20 ◇	HG-SR102(B)G7 1/21		
	Dec. 2005	HC-RF103(B)G2 1/29 ◇	HG-SR102(B)G7 1/33		
	Dec. 2005	HC-RF103(B)G2 1/45 ◇	HG-SR102(B)G7 1/45		
	Dec. 2005	HC-RF153(B)G2 1/5	HG-SR152(B)G7 1/5		
	Dec. 2005	HC-RF153(B)G2 1/9	HG-SR152(B)G7 1/11		
	Dec. 2005	HC-RF153(B)G2 1/20	HG-SR152(B)G7 1/21		
	Dec. 2005	HC-RF153(B)G2 1/29	HG-SR152(B)G7 1/33		
	Dec. 2005	HC-RF153(B)G2 1/45	HG-SR152(B)G7 1/45		
	Dec. 2005	HC-RF203(B)G2 1/5 ◇	HG-SR202(B)G7 1/5		
	Dec. 2005	HC-RF203(B)G2 1/9 ◇	HG-SR202(B)G7 1/11		
	Dec. 2005	HC-RF203(B)G2 1/20 ◇	HG-SR202(B)G7 1/21		
	Dec. 2005	HC-RF203(B)G2 1/29 ◇	HG-SR202(B)G7 1/33		
	Dec. 2005	HC-RF203(B)G2 1/45 ◇	HG-SR202(B)G7 1/45		
	Dec. 2005	HC-RF353(B)G2 1/5 ◇	HG-SR352(B)G7 1/5		
	Dec. 2005	HC-RF353(B)G2 1/9 ◇	HG-SR352(B)G7 1/11		
	Dec. 2005	HC-RF353(B)G2 1/20 ◇	HG-SR352(B)G7 1/21		
	Dec. 2005	HC-RF353(B)G2 1/29 ◇	HG-SR352(B)G7 1/21 ◆		
	Dec. 2005	HC-RF503(B)G2 1/5	HG-SR502(B)G7 1/5		
	Dec. 2005	HC-RF503(B)G2 1/9	HG-SR502(B)G7 1/11		
	Dec. 2005	HC-RF503(B)G2 1/20	HG-SR502(B)G7 1/11 ◆		

Note 1: For mounting dimensions, refer to "2.2.3 Comparison of mounting dimensions for servo motors with reducer".

Note 2: The power supply and encoder connector will be changed. For details, refer to "2.2.6 Comparison of servo motor connector specifications".

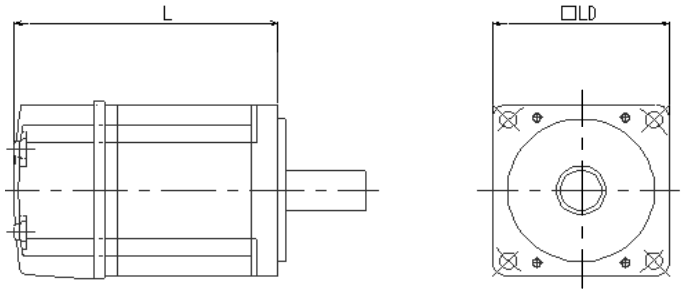
Series	Production discontinuation time	Model	Example of replacement model	Compatibility (○: Compatible)	Precautions
Medium capacity, low inertia HA-LH series	Dec. 2005	HA-LH52 ◇	HG-JR73	(Note 1)	• When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-70□ servo amplifier is compatible with HG-JR73, the MR-J4-350□ servo amplifier is compatible with HG-JR353, MR-J4-700□ servo amplifier is compatible with HG-JR703, and .MR-J4-11K□ servo amplifier is compatible with HG-JR903.
	Dec. 2005	HA-LH102	HG-JR153		
	Dec. 2005	HA-LH152 ◇	HG-JR353		
	Dec. 2005	HA-LH202	HG-JR353		
	Dec. 2005	HA-LH302	HG-JR503		
	Dec. 2005	HA-LH502 ◇	HG-JR703		
	Dec. 2005	HA-LH702 ◇	HG-JR903		
Medium capacity, flat type HA-UH series (B): With brake	Dec. 2005	HA-UH32(B) ◇	HG-UR72(B)	(Note 1)	• When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-70□ servo amplifier is compatible with HG-UR72, and the MR-J4-500□ servo amplifier is compatible with HG-UR352.
	Dec. 2005	HA-UH52(B) ◇	HG-UR72(B)		
	Dec. 2005	HA-UH102(B)	HG-UR152(B)		
	Dec. 2005	HA-UH152(B)	HG-UR152(B)		
	Dec. 2005	HA-UH222(B) ◇	HG-UR352(B)		
	Dec. 2005	HA-UH352(B)	HG-UR352(B)		
	Dec. 2005	HA-UH452(B)	HG-UR502(B)		
Medium capacity, flat type HC-UF series (B): With brake	Dec. 2005	HC-UF72(B)	HG-UR72(B)	○	
	Dec. 2005	HC-UF152(B)	HG-UR152(B)		
	Dec. 2005	HC-UF202(B)	HG-UR202(B)		
	Dec. 2005	HC-UF352(B)	HG-UR352(B)		
	Dec. 2005	HC-UF502(B)	HG-UR502(B)		
Small capacity, flat type HC-UF series (B): With brake	Dec. 2005	HC-UF13(B)	HG-KR13(B)	(Note 1)	• The HG-KR servo motor does not have an oil seal. Use HG-KR□J when an oil seal is required.
	Dec. 2005	HC-UF23(B)	HG-KR23(B)		
	Dec. 2005	HC-UF43(B)	HG-KR43(B)		
	Dec. 2005	HC-UF73(B)	HG-KR73(B)		
Large capacity, low inertia HA-LH series	Dec. 2005	HA-LH11K2	HG-JR11K1M	(Note 1)	• When the replacement model marked with ◇ is used, the capacity of compatible servo amplifier is different. The MR-J4-11K□ servo amplifier is compatible with HG-JR11K1M, and the MR-J4-15K□ servo amplifier is compatible with HG-JR15K1M.
	Dec. 2005	HA-LH15K2 ◇			
	Dec. 2005	HA-LH22K2 ◇	HG-JR15K1M		
Large capacity, low inertia HA-LF series	Dec. 2005	HA-LF11K1M	HG-JR11K1M	(Note 1)	
	Dec. 2005	HA-LF15K1M	HG-JR15K1M		
	Dec. 2005	HA-LF22K1M	HG-JR22K1M		

Note 1: For mounting dimensions, refer to "2.2.2 Detailed comparison of servo motor mounting dimensions".

Note 2: The power supply and encoder connector will be changed. For details, refer to "2.2.6 Comparison of servo motor connector specifications".

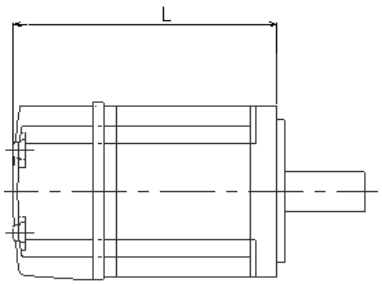
2.2 Comparison of Servo Motor Specifications

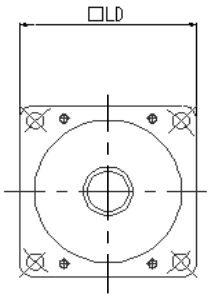
2.2.1 Comparison of servo motor mounting dimensions



Target product			Replacement product			Precautions
Model	L	LD	Model	L	LD	
HA-MH053(B)	81.5 (110.5)	40	HG-MR053(B)	66.4 (107)	40	
HC-MF053(B)	81.5 (109.5)					
HA-MH13(B)	99.5 (128.5)		HG-MR13(B)	82.4 (123)		
HC-MF13(B)	96.5 (124.5)					
HA-MH23(B)	101.5 (134)	60	HG-MR23(B)	76.6 (113.4)	60	
HC-MF23(B)	99.5 (131.5)					
HA-MH43(B)	129.5 (162)		HG-MR43(B)	98.3 (135.1)		
HC-MF43(B)	124.5 (156.5)					
HA-MH73(B)	150 (182.5)	80	HG-MR73(B)	112 (152.3)	80	
HC-MF73(B)	142 (177.5)					
HA-FH053(B)	101 (136)	54	HG-KR053(B)	66.4 (107)	40	No compatibility in mounting. For details, refer to "2.2.2 Detailed comparison of servo motor mounting dimensions".
HA-FF053(B)	106 (141)					
HA-FH13(B)	118 (153)		HG-KR13(B)	82.4 (123)		
HA-FF13(B)	123 (158)					
HA-FH23(B)	126 (163)	76	HG-KR23(B)	76.6 (113.4)	60	
HA-FF23(B)	131 (168)					
HA-FH33(B)	143 (181)		HG-KR43(B)	98.3 (135.1)		
HA-FF33(B)	148 (186)					
HA-FH43(B)	150 (187)	100				
HA-FF43(B)	155 (192)					
HA-FH63(B)	165 (202)		HG-KR73(B)	112 (152.3)	80	
HA-FF63(B)	170 (207)					
HA-SH81(B)	294 (344)	130	HG-SR81(B)	146.5 (181)	130	
HC-SF81(B)	170 (203)					
HA-SH121(B)	262 (329)	176	HG-SR121(B)	138.5 (188)	176	
HC-SF121(B)	145 (193)					
HA-SH201(B)	330 (397)		HG-SR201(B)	162.5 (212)		
HC-SF201(B)	187 (235)					
HA-SH301(B)	398 (465)		HG-SR301(B)	178.5 (228)		
HC-SF301(B)	208 (256)					
HA-SH52(B) HA-SH53(B)	214 (264)	130	HG-SR52(B)	118.5 (153)	130	
HC-SF52(B) HC-SF53(B)	120 (153)					
HA-SH102(B) HA-SH103(B)	254 (304)		HG-SR102(B)	132.5 (167)		
HC-SF102(B) HC-SF103(B)	145 (178)					
HA-SH152(B) HA-SH153(B)	294 (344)		HG-SR152(B)	146.5 (181)		
HC-SF152(B) HC-SF153(B)	170 (203)					

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. ( ): With brake [Unit: mm]

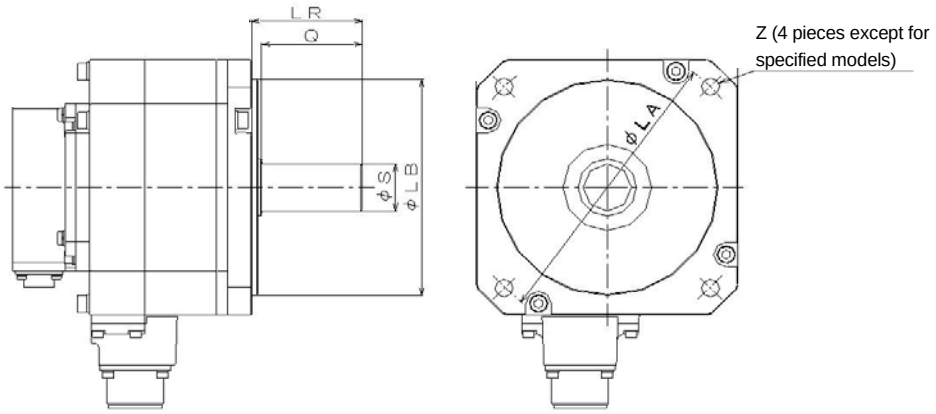




Target product			Replacement product			Precautions
Model	L	LD	Model	L	LD	
HA-SH202(B) HA-SH203(B)	262 (329)	176	HG-SR202(B)	138.5 (188)	176	
HC-SF202(B) HC-SF203(B)	145 (193)					
HA-SH352(B) HA-SH353(B)	330 (397)		HG-SR352(B)	162.5 (212)		
HC-SF352(B) HC-SF353(B)	187 (235)					
HA-SH502(B)	398 (465)		HG-SR502(B)	178.5 (228)		
HC-SF502(B)	208 (256)					
HA-SH702(B)	482 (549)		HG-SR702(B)	218.5 (268)		
HC-SF702(B)	292 (340)					
HC-RF103(B)	147 (185)	100	HG-RR103(B)	145.5 (183)	100	
HC-RF153(B)	172 (210)		HG-RR153(B)	170.5 (208)		
HC-RF203(B)	197 (235)		HG-RR203(B)	195.5 (233)		
HC-RF353(B)	217 (254)	130	HG-RR353(B)	215.5 (252)	130	
HC-RF503(B)	274 (311)		HG-RR503(B)	272.5 (309)		
HA-LH52	204	130	HG-JR73	145.5	90	No compatibility in mounting. For details, refer to "2.2.2 Detailed comparison of servo motor mounting dimensions".
HA-LH102	244		HG-JR153	199.5		
HA-LH152	294		HG-JR353	213	130	
HA-LH202	259	170				
HA-LH302	299		HG-JR503	267		
HA-LH502	329	200	HG-JR703	263.5	176	
HA-LH702	459	204	HG-JR903	303.5		
HA-UH32(B)	145 (157)	150	HG-UR72(B)	109 (142.5)	176	No compatibility in mounting. For details, refer to "2.2.2 Detailed comparison of servo motor mounting dimensions".
HA-UH52(B)	145 (157)					
HA-UH102(B)	170 (180)	180	HG-UR152(B)	118.5 (152)		
HA-UH152(B)	185 (195)					
HA-UH222(B)	211 (220)	220	HG-UR352(B)	140.5 (183.5)	220	
HA-UH352(B)	234 (244)					
HA-UH452(B)	250 (260)		HG-UR502(B)	164.5 (207.5)		
HC-UF72(B)	110.5 (144)	176	HG-UR72(B)	109 (142.5)	176	
HC-UF152(B)	120 (153.5)		HG-UR152(B)	118.5 (152)		
HC-UF202(B)	118 (161)	220	HG-UR202(B)	116.5 (159.5)	220	
HC-UF352(B)	142 (185)		HG-UR352(B)	140.5 (183.5)		
HC-UF502(B)	166 (209)		HG-UR502(B)	164.5 (207.5)		
HC-UF13(B)	70 (100)	60	HG-KR13(B)	82.4 (123)	40	No compatibility in mounting. For details, refer to "2.2.2 Detailed comparison of servo motor mounting dimensions".
HC-UF23(B)	77 (111)	80	HG-KR23(B)	76.6 (113.4)	60	
HC-UF43(B)	92 (126)		HG-KR43(B)	98.3 (135.1)		
HC-UF73(B)	85 (111)	123	HG-KR73(B)	112 (152.3)	80	
HA-LH11K2	529	204	HG-JR11K1M	339.5	220	No compatibility in mounting. For details, refer to "2.2.2 Detailed comparison of servo motor mounting dimensions".
HA-LH15K2	578	250				
HA-LH22K2	643		HG-JR15K1M	439.5		
HA-LF11K1M	495		HG-JR11K1M	339.5		
HA-LF15K1M	555		HG-JR15K1M	439.5		
HA-LF22K1M	605	280	HG-JR22K1M	476	250	

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. ( ): With brake [Unit: mm]

2.2.2 Detailed comparison of servo motor mounting dimensions



Target product							Replacement product						
Model	LA	LB	LR	Q	S	Z	Model	LA	LB	LR	Q	S	Z
HA-FH053(B)	60	50	30	-	8	4.5	HG-KR053(B)	46	30	25	21.5	8	2-4.5
HA-FF053(B)	60	50	30	-	8	4.5							
HA-FH13(B)	60	50	30	-	8	4.5	HG-KR13(B)	46	30	25	21.5	8	2-4.5
HA-FF13(B)	60	50	30	-	8	4.5							
HA-FH23(B) *Note2	90	70	30	25	11	5.5	HG-KR23(B)	70	50	30	26	14	5.8
HA-FF23(B) *Note2	90	70	30	25	11	5.5							
HA-FH33(B) *Note2	90	70	30	25	11	5.5	HG-KR43(B)	70	50	30	26	14	5.8
HA-FF33(B) *Note2	90	70	30	25	11	5.5							
HA-FH43(B) *Note2	115	95	40	35	16	9	HG-KR43(B)	70	50	30	26	14	5.8
HA-FF43(B) *Note2	115	95	40	35	16	9							
HA-FH63(B) *Note2	115	95	40	35	16	9	HG-KR73(B)	90	70	40	36	19	6.6
HA-FF63(B) *Note2	115	95	40	35	16	9							
HA-LH52	145	110	55	50	24	9	HG-JR73	100	80	40	30	16	6.6
HA-LH102	145	110	55	50	24	9	HG-JR153	100	80	40	30	16	6.6
HA-LH152	145	110	55	50	24	9	HG-JR353	165	110	55	50	28	9
HA-LH202	200	114.3	79	-	35	13.5	HG-JR353	165	110	55	50	28	9
HA-LH302	200	114.3	79	-	35	13.5	HG-JR503	165	110	55	50	28	9
HA-LH502	215	180	85	80	42	14.5	HG-JR703	200	114.3	79	75	35	13.5
HA-LH702	215	180	85	80	42	14.5	HG-JR903	200	114.3	79	75	35	13.5
HA-UH32(B)	165	130	35	30	14	11	HG-UR72(B)	200	114.3	55	50	22	13.5
HA-UH52(B)	165	130	35	30	14	11	HG-UR72(B)	200	114.3	55	50	22	13.5
HA-UH102(B)	200	114.3	55	50	22	13.5	HG-UR152(B)	200	114.3	55	50	28	13.5
HA-UH152(B)	200	114.3	55	50	28	13.5	HG-UR152(B)	200	114.3	55	50	28	13.5
HA-UH222(B)	235	200	55	50	28	13.5	HG-UR352(B)	235	200	65	60	35	13.5
HA-UH352(B)	235	200	65	60	35	13.5	HG-UR352(B)	235	200	65	60	35	13.5
HA-UH452(B)	235	200	65	60	35	13.5	HG-UR502(B)	235	200	65	60	35	13.5
HC-UF13(B)	70	50	25	-	8	5.8	HG-KR13(B)	46	30	25	21.5	8	2-4.5
HC-UF23(B)	90	70	30	-	14	6.6	HG-KR23(B)	70	50	30	26	14	5.8
HC-UF43(B)	90	70	30	-	14	6.6	HG-KR43(B)	70	50	30	26	14	5.8
HC-UF73(B)	145	110	40	32.5	19	9	HG-KR73(B)	90	70	40	36	19	6.6
HA-LH11K2	215	180	85	80	42	14.5	HG-JR11K1M	235	200	116	110	55	13.5
HA-LH15K2	265	230	110	100	55	14.5	HG-JR11K1M	235	200	116	110	55	13.5
HA-LH22K2	265	230	110	100	55	14.5	HG-JR15K1M	235	200	116	110	55	13.5
HA-LF11K1M	265	230	110	100	55	14.5	HG-JR11K1M	235	200	116	110	55	13.5
HA-LF15K1M	265	230	110	100	55	14.5	HG-JR15K1M	235	200	116	110	55	13.5
HA-LF22K1M	300	250	140	-	60	19	HG-JR22K1M	265	230	140	130	65	24

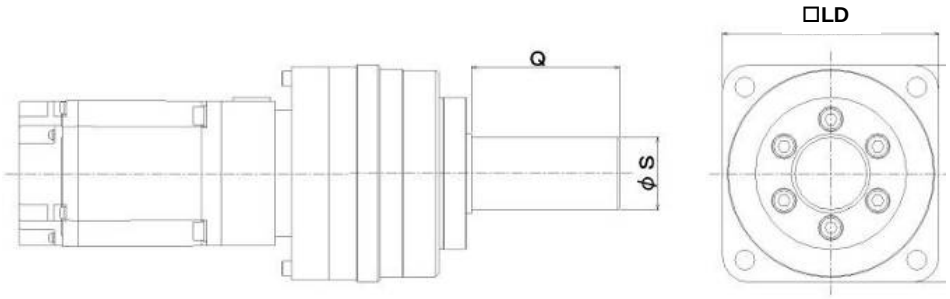
Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. ( ): With brake [Unit: mm]

Note 2:Specification with the shaft end key.

Note 3: Dimensions with differences are shown with shading.

2.2.3 Comparison of mounting dimensions for servo motors with reducer

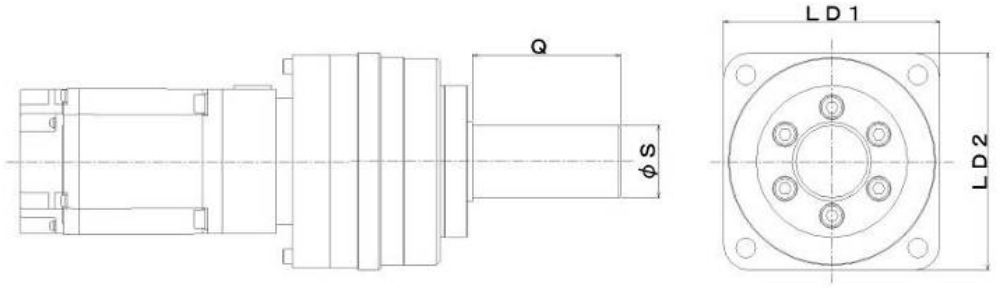
(For high precision applications: HA-MH□G, HC-MF□G2 → HG-KR□G7)



Output (W)	HA-MH, HC-MF series (G2)				HG-KR series (G7)			
	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD
50	1/5	25	16	70	1/5	28	16	60
	1/9	25	16	70	1/11	28	16	60
	1/20	25	16	70	1/21	28	16	60
	1/29	25	16	70	1/33	28	16	60
100	1/5	25	16	70	1/5	28	16	60
	1/9	25	16	70	1/11	28	16	60
	1/20	35	20	85	1/21	28	16	60
	1/29	35	20	85	1/33	42	25	90
200	1/5	25	16	70	1/5	28	16	60
	1/9	35	20	85	1/11	28	16	60
	1/20	40	25	100	1/21	42	25	90
	1/29	40	25	100	1/33	42	25	90
400	1/5	35	20	85	1/5	28	16	60
	1/9	40	25	100	1/11	42	25	90
	1/20	50	32	115	1/21	42	25	90
	1/29	50	32	115	1/33	82	40	120
750	1/5	40	25	100	1/5	42	25	90
	1/9	50	32	115	1/11	42	25	90
	1/20	60	40	130	1/21	82	40	120
	1/29	60	40	130	1/33	82	40	120

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

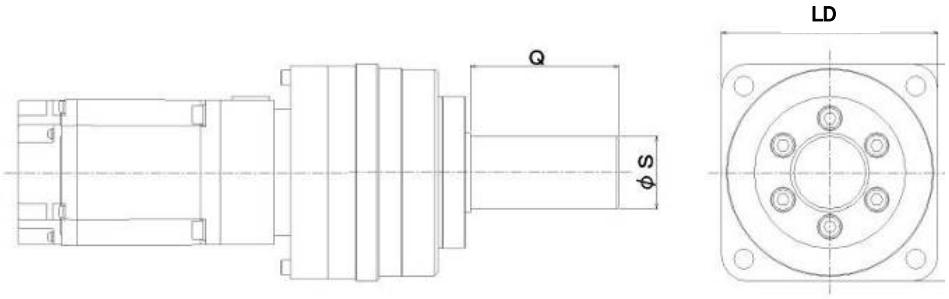
(For general industrial machines: HA-FH□G, HA-FF□G1 → HG-KR□G1)



HA-FH, HA-FF series (G1)					HG-KR series (G1)				
Output (W)	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD1 × LD2	Output (W)	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD1 × LD2
50	1/5	33	15	□90	50	1/5	25	16	□65
	1/10	33	15	□90		1/12	25	16	□65
	1/20	33	15	□90		1/20	25	16	□65
	1/30	33	15	□90		-	-	-	-
100	1/5	33	15	□90	100	1/5	25	16	□65
	1/10	33	15	□90		1/12	25	16	□65
	1/20	33	15	□90		1/20	25	16	□65
	1/30	33	15	□90		-	-	-	-
200	1/5	25	16	145 × 150	200	1/5	35	25	□90
	1/10	25	16	145 × 150		1/12	35	25	□90
	1/20	25	16	145 × 150		1/20	35	25	□90
	1/30	25	16	145 × 150		-	-	-	-
300 400	1/5	28	19	145 × 160	400	1/5	35	25	□90
	1/10	28	19	145 × 160		1/12	35	25	□90
	1/20	28	19	145 × 160		1/20	50	32	□100
	1/30	28	19	145 × 160		-	-	-	-
600	1/5	36	22	185 × 192.5	750	1/5	50	32	□100
	1/10	36	22	185 × 192.5		1/12	50	32	□100
	1/20	36	22	185 × 192.5		1/20	60	40	□120
	1/30	36	22	185 × 192.5		-	-	-	-

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

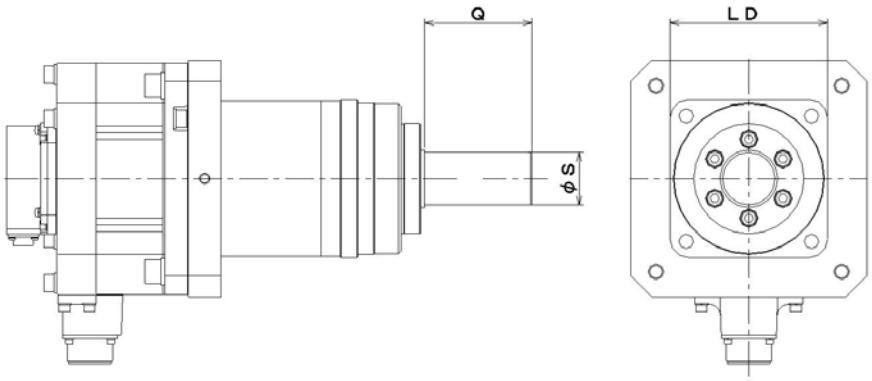
(For high precision applications: HA-FH□G, HA-FF□G2 → HG-KR□G7)



HA-FH, HA-FF series (G2)					HG-KR series (G7)				
Output (W)	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD1 × LD2	Output (W)	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD1 × LD2
50	1/5	20	10	□74	50	1/5	28	16	□60
	1/10	20	10	□74		1/11	28	16	□60
	1/15	20	10	□74		1/21	28	16	□60
	1/25	25	14	□87		1/33	28	16	□60
100	1/5	20	10	□74	100	1/5	28	16	□60
	1/10	25	14	□87		1/11	28	16	□60
	1/15	25	14	□87		1/21	28	16	□60
	1/25	40	22	□118		1/33	42	25	□90
	1/45	40	25	□120		1/45	42	25	□90
200	1/5	25	14	□87	200	1/5	28	16	□60
	1/10	40	22	□118		1/11	28	16	□60
	1/15	40	22	□118		1/21	42	25	□90
	1/20	40	25	□120		1/21	42	25	□90
	1/29	40	25	□120		1/33	42	25	□90
	1/45	55	35	□140		1/45	42	25	□90
300	1/5	40	22	□118	400	1/5	28	16	□60
	1/10	40	22	□118		1/11	42	25	□90
	1/20	40	25	□120		1/21	42	25	□90
	1/29	55	35	□140		1/33	82	40	□120
	1/45	55	35	□140		1/45	82	40	□120
400	1/5	40	22	□118	400	1/5	28	16	□60
	1/9	40	25	□120		1/11	42	25	□90
	1/20	55	35	□140		1/21	42	25	□90
	1/29	55	35	□140		1/33	82	40	□120
	1/45	55	35	□140		1/45	82	40	□120
600	1/5	40	25	□120	750	1/5	42	25	□90
	1/9	40	25	□120		1/11	42	25	□90
	1/20	55	35	□140		1/21	82	40	□120
	1/29	55	35	□140		1/33	82	40	□120
	1/45	75	50	φ245		1/45	82	40	□120

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

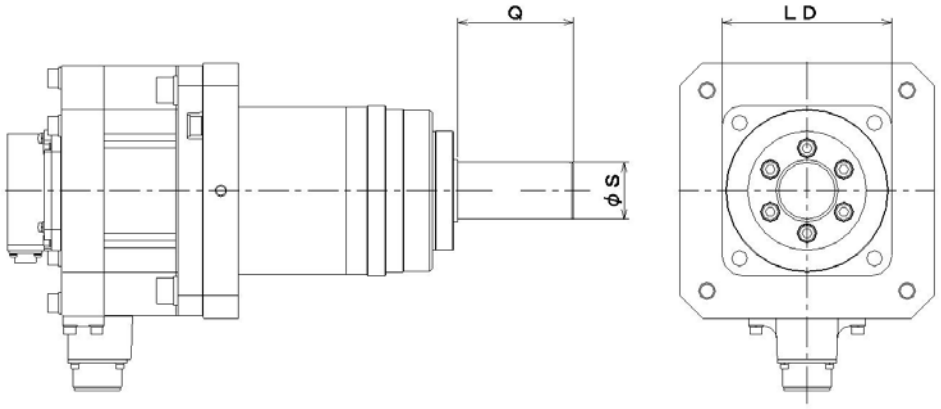
(For high precision applications: HA-SH□G, HC-SF□G2 → HG-SR□G7)



Output (kW)	HA-SH, HC-SF series (G2)				HG-SR series (G7)			
	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD
0.5	1/5	55	35	□140	1/5	42	25	□90
	1/9	55	35	□140	1/11	42	25	□90
	1/20	55	35	□140	1/21	82	40	□120
	1/29	75	50	φ245	1/33	82	40	□120
	1/45	75	50	φ245	1/45	82	40	□120
1.0	1/5	55	35	□140	1/5	42	25	□90
	1/9	55	35	□140	1/11	82	40	□120
	1/20	75	50	φ245	1/21	82	40	□120
	1/29	75	50	φ245	1/33	82	50	□170
	1/45	90	60	φ310	1/45	82	50	□170
1.5	1/5	55	35	□140	1/5	42	25	□90
	1/9	75	50	φ245	1/11	82	40	□120
	1/20	75	50	φ245	1/21	82	50	□170
	1/29	90	60	φ310	1/33	82	50	□170
	1/45	90	60	φ310	1/45	82	50	□170
2.0	1/5	75	50	φ245	1/5	82	40	□120
	1/9	75	50	φ245	1/11	82	40	□120
	1/20	90	60	φ310	1/21	82	50	□170
	1/29	90	60	φ310	1/33	82	50	□170
	1/45	90	60	φ310	1/45	82	50	□170
3.5	1/5	90	60	φ310	1/5	82	40	□120
	1/9	90	60	φ310	1/11	82	50	□170
	1/20	90	60	φ310	1/21	82	50	□170
5.0	1/5	90	60	φ310	1/5	82	50	□170
	1/9	90	60	φ310	1/11	82	50	□170
7.0	1/5	90	60	φ310	1/5	82	50	□170

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

(For high precision applications: HC-RF□G2 → HG-SR□G7)



Output (kW)	HC-RF series (G2)				HG-SR series (G7)			
	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD	Reduction ratio	Shaft length Q	Shaft diameter S	Flange LD
1.0	1/5	55	35	□140	1/5	42	25	□90
	1/9	55	35	□140	1/11	82	40	□120
	1/20	75	50	φ245	1/21	82	40	□120
	1/29	75	50	φ245	1/33	82	50	□170
	1/45	75	50	φ245	1/45	82	50	□170
1.5	1/5	55	35	□140	1/5	42	25	□90
	1/9	75	50	φ245	1/11	82	40	□120
	1/20	75	50	φ245	1/21	82	50	□170
	1/29	75	50	φ245	1/33	82	50	□170
	1/45	90	60	φ310	1/45	82	50	□170
2.0	1/5	55	35	□140	1/5	82	40	□120
	1/9	75	50	φ245	1/11	82	40	□120
	1/20	75	50	φ245	1/21	82	50	□170
	1/29	90	60	φ310	1/33	82	50	□170
	1/45	90	60	φ310	1/45	82	50	□170
3.5	1/5	75	50	φ245	1/5	82	40	□120
	1/9	90	60	φ310	1/11	82	50	□170
	1/20	90	60	φ310	1/21	82	50	□170
	1/29	90	60	φ310	-	-	-	-
5.0	1/5	90	60	φ310	1/5	82	50	□170
	1/9	90	60	φ310	1/11	82	50	□170
	1/20	90	60	φ310	-	-	-	-

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. [Unit: mm]

2.2.4 Comparison of actual reduction ratios for servo motors with reducer

For replacement from HC-MF□G1 to HG-KR□G1, and from HA-FH□G or FF□G1 to HG-KR□G1, actual reduction ratio of the reducer may be different. Setting of the electronic gear is required.

(For general industrial machines: HC-MF□G1 → HG-KR□G1)

Output (W)	Reduction ratio	Actual reduction ratio	
		HC-MF series	HG-KR series
50	1/5	9/44	9/44
	1/12	49/576	49/576
	1/20	25/484	25/484
100	1/5	9/44	9/44
	1/12	49/576	49/576
	1/20	25/484	25/484
200	1/5	19/96	19/96
	1/12	25/288	961/11664
	1/20	253/5000	513/9984
400	1/5	19/96	19/96
	1/12	25/288	961/11664
	1/20	253/5000	7/135
750	1/5	1/5	1/5
	1/12	525/6048	7/87
	1/20	625/12544	625/12544

Note 1: Actual reduction ratios with differences are shown with shading.

(For general industrial machines: HA-FH□G, HA-FF□G1 → HG-KR□G1)

HA-FH, HA-FF series			HG-KR series		
Output (W)	Reduction ratio	Actual reduction ratio	Output (W)	Reduction ratio	Actual reduction ratio
50	1/5	9/44	50	1/5	9/44
	1/10	3/29		1/12	49/576
	1/20	99/1972		1/20	25/484
	1/30	144/4205		-	-
100	1/5	9/44	100	1/5	9/44
	1/10	3/29		1/12	49/576
	1/20	99/1972		1/20	25/484
	1/30	144/4205		-	-
200	1/5	57/280	200	1/5	19/96
	1/10	39/400		1/12	961/11664
	1/20	51/980		1/20	513/9984
	1/30	1/30		-	-
300 400	1/5	19/94	400	1/5	19/96
	1/10	39/376		1/12	961/11664
	1/20	72/1363		1/20	7/135
	1/30	11/329		-	-
600	1/5	10/49	750	1/5	1/5
	1/10	243/2401		1/12	7/87
	1/20	153/2891		1/20	625/12544
	1/30	27/784		-	-

Note 1: Actual reduction ratios with differences are shown with shading.

2.2.5 Comparison of moment of inertia

Series	Target product			Replacement product		
	Model	Moment of inertia $\times 10^{-4}$ kg•m^2	Recommended load to motor inertia ratio	Model	Moment of inertia $\times 10^{-4}$ kg•m^2	Recommended load to motor inertia ratio
Small capacity, ultra-low inertia	HA-MH053(B)	0.021(0.024)	30 times or less	HG-MR053(B)	0.0162(0.0224)	35 times or less
	HC-MF053(B)	0.019(0.022)				
	HA-MH13(B)	0.035(0.38)		HG-MR13(B)	0.0300(0.0362)	32 times or less
	HC-MF13(B)	0.030(0.032)				
	HA-MH23(B)	0.11(0.17)		HG-MR23(B)	0.0865(0.109)	
	HC-MF23(B)	0.088(0.136)				
	HA-MH43(B)	0.18(0.22)		HG-MR43(B)	0.142(0.164)	
	HC-MF43(B)	0.143(0.191)				
	HA-MH73(B)	0.73(0.93)		HG-MR73(B)	0.586(0.694)	
	HC-MF73(B)	0.600(0.725)				
Small capacity, low inertia	HA-FH053(B) HA-FF053(B)	0.063(0.080)	10 times or less	HG-KR053(B)	0.0450(0.0472)	17 times or less
	HA-FH13(B) HA-FF13(B)	0.095(0.113)		HG-KR13(B)	0.0777(0.0837)	
	HA-FH23(B) HA-FF23(B)	0.35(0.483)		HG-KR23(B)	0.221(0.243)	26 times or less
	HA-FH33(B) HA-FF33(B)	0.50(0.633)		HG-KR43(B)	0.371(0.393)	25 times or less
	HA-FH43(B) HA-FF43(B)	0.98(1.325)				
	HA-FH63(B) HA-FF63(B)	1.20(1.55)		HG-KR73(B)	1.26(1.37)	17 times or less
Medium capacity, medium inertia	HA-SH81(B)	29.5(30.2)	HA-SH series 10 times or less HC-SF series 15 times or less	HG-SR81(B)	16.0(18.2)	17 times or less
	HC-SF81(B)	20.0(22.0)				
	HA-SH121(B)	68.5(72.8)		HG-SR121(B)	46.8(56.5)	15 times or less
	HC-SF121(B)	42.5(52.5)				
	HA-SH201(B)	131(136)		HG-SR201(B)	78.6(88.2)	
	HC-SF201(B)	82.0(92.0)				
	HA-SH301(B)	192(196)		HG-SR301(B)	99.7(109)	
	HC-SF301(B)	101(111)				
	HA-SH52(B) HA-SH53(B)	9.8(10.5)		HG-SR52(B)	7.26(9.48)	
	HC-SF52(B) HC-SF53(B)	6.6(8.6)				
	HA-SH102(B) HA-SH103(B)	19.6(20.3)		HG-SR102(B)	11.6(13.8)	17 times or less
	HC-SF102(B) HC-SF103(B)	13.7(15.7)				
	HA-SH152(B) HA-SH153(B)	29.5(30.2)		HG-SR152(B)	16.0(18.2)	
	HC-SF152(B) HC-SF153(B)	20(22)				
	HA-SH202(B) HA-SH203(B)	68.5(72.8)		HG-SR202(B)	46.8(56.5)	15 times or less
	HC-SF202(B) HC-SF203(B)	42.5(52.5)				
	HA-SH352(B) HA-SH353(B)	131(136)		HG-SR352(B)	78.6(88.2)	
	HC-SF352(B) HC-SF353(B)	82(92)				
	HA-SH502(B)	192(196)		HG-SR502(B)	99.7(109)	
	HC-SF502(B)	101(111)				
	HA-SH702(B)	254(258)		HG-SR702(B)	151(161)	
	HC-SF702(B)	160(170)				

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. ( ): With brake

Series	Target product			Replacement product		
	Model	Moment of inertia $\times 10^{-4}$ kg•m^2	Recommended load to motor inertia ratio	Model	Moment of inertia $\times 10^{-4}$ kg•m^2	Recommended load to motor inertia ratio
Medium capacity, ultra-low inertia	HC-RF103(B)	1.5(1.85)	5 times or less	HG-RR103(B)	1.50(1.85)	5 times or less
	HC-RF153(B)	1.9(2.25)		HG-RR153(B)	1.90(2.25)	
	HC-RF203(B)	2.3(2.65)		HG-RR203(B)	2.30(2.65)	
	HC-RF353(B)	8.6(11.8)		HG-RR353(B)	8.30(11.8)	
	HC-RF503(B)	12.0(15.5)		HG-RR503(B	12.0(15.5)	
Medium capacity, low inertia	HA-LH52	2.75	10 times or less	HG-JR73	2.09	10 times or less
	HA-LH102	5.50		HG-JR153	3.79	
	HA-LH152	8.25		HG-JR353	13.2	
	HA-LH202	19.6				
	HA-LH302	29.3		HG-JR503	19.0	
	HA-LH502	88.3		HG-JR703	43.3	
	HA-LH702	88.3		HG-JR903	55.8	
Medium capacity, flat type	HA-UH32(B)	1.9(2.2)	10 times or less	HG-UR72(B)	10.4(12.5)	15 times or less
	HA-UH52(B)	3.8(4.0)				
	HA-UH102(B)	9.8(10.5)		HG-UR152(B)	22.1(24.2)	
	HA-UH152(B)	14.0(14.8)				
	HA-UH222(B)	24.8(25.8)		HG-UR352(B)	76.5(85.1)	
	HA-UH352(B)	35.0(36.0)				
	HA-UH452(B)	48.0(49.0)		HG-UR502(B)	115(124)	
	HC-UF72(B)	10.4(12.4)	15 times or less	HG-UR72(B)	10.4(12.5)	
	HC-UF152(B)	22.1(24.1)		HG-UR152(B)	22.1(24.2)	
	HC-UF202(B)	38.2(46.8)		HG-UR202(B)	38.2(46.8)	
	HC-UF352(B)	76.5(85.1)		HG-UR352(B)	76.5(85.1)	
	HC-UF502(B)	115(123.6)		HG-UR502(B)	115(124)	
Small capacity, flat type	HC-UF13(B)	0.066(0.074)	15 times or less	HG-KR13(B)	0.0777(0.0837)	17 times or less
	HC-UF23(B)	0.241(0.323)		HG-KR23(B)	0.221(0.243)	26 times or less
	HC-UF43(B)	0.365(0.447)		HG-KR43(B)	0.371(0.393)	25 times or less
	HC-UF73(B)	5.90(6.10)		HG-KR73(B)	1.26(1.37)	17 times or less
Large capacity, low inertia	HA-LH11K2	118	10 times or less	HG-JR11K1M	220	10 times or less
	HA-LH15K2	290				
	HA-LH22K2	395		HG-JR15K1M	315	
	HA-LF11K1M	220		HG-JR11K1M	220	
	HA-LF15K1M	295		HG-JR15K1M	315	
	HA-LF22K1M	550		HG-JR22K1M	489	

Note 1: As for the dimensions not listed here, refer to the catalog or Instruction Manual. ( ): With brake

2.2.6 Comparison of servo motor connector specifications

(1) HA-MH motor

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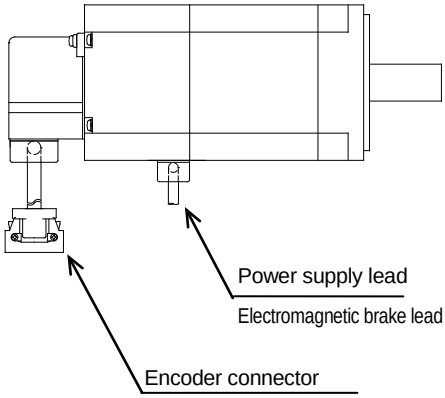
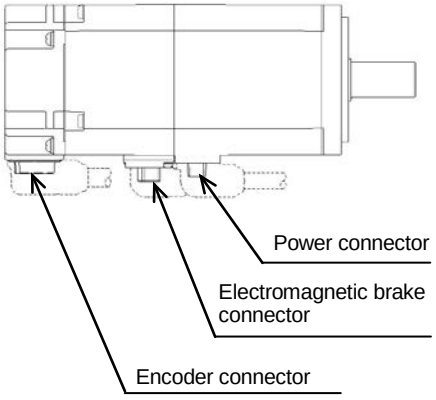
<tr><td>Motor appearance</td><td> 
</td><td> 
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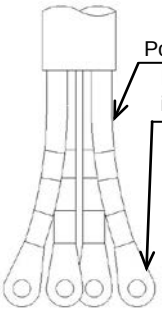
<tr><td>Power connector</td><td> 

Power supply lead color assignment
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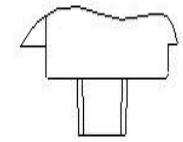
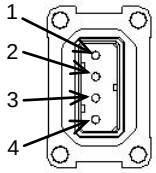
<tr><th>Lead color</th><th>Signal name</th></tr>
<tr><td>Red</td><td>U</td></tr>
<tr><td>White</td><td>V</td></tr>
<tr><td>Black</td><td>W</td></tr>
<tr><td>Green</td><td>Earth</td></tr>
</table></td><td> 


Power connector pin assignment
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<tr><td>1</td><td>Earth</td></tr>
<tr><td>2</td><td>U</td></tr>
<tr><td>3</td><td>V</td></tr>
<tr><td>4</td><td>W</td></tr>
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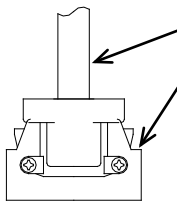
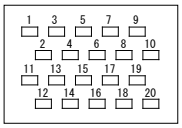
<tr><td>Encoder connector</td><td> 



Encoder connector pin assignment
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<tr><td>2</td><td>GND</td><td>12</td><td>SD</td></tr>
<tr><td>3</td><td>RQ</td><td>13</td><td>VB</td></tr>
<tr><td>4</td><td>RQ</td><td>14</td><td>GND</td></tr>
<tr><td>5</td><td></td><td>15</td><td></td></tr>
<tr><td>6</td><td></td><td>16</td><td></td></tr>
<tr><td>7</td><td>5 V</td><td>17</td><td></td></tr>
<tr><td>8</td><td>5 V</td><td>18</td><td></td></tr>
<tr><td>9</td><td></td><td>19</td><td></td></tr>
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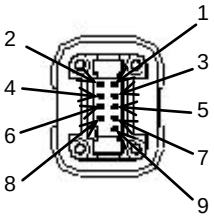

Encoder connector pin assignment
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<tr><td>4</td><td>MRR</td></tr>
<tr><td>5</td><td>MR</td></tr>
<tr><td>6</td><td>LG</td></tr>
<tr><td>7</td><td></td></tr>
<tr><td>8</td><td></td></tr>
<tr><td>9</td><td>SHD</td></tr>
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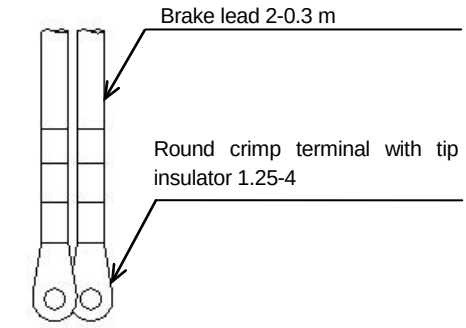
<tr><td>Electromagnetic brake connector</td><td> 
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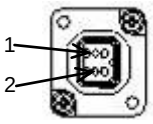

Electromagnetic brake connector pin assignment
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(2) HC-MF/UF motor

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 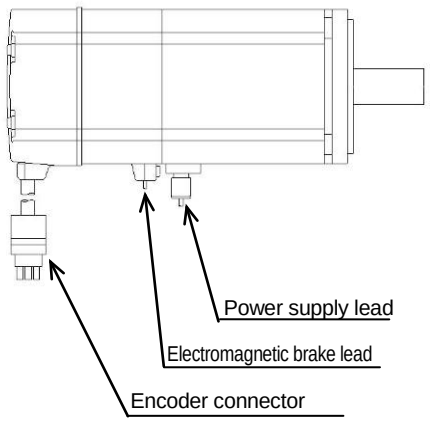
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 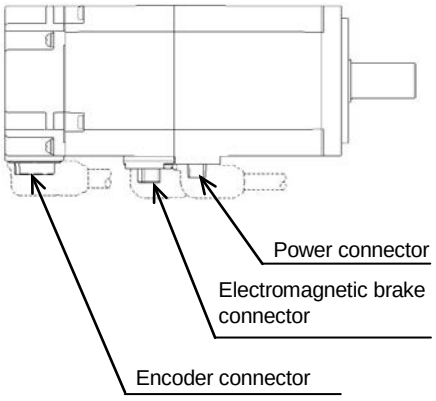
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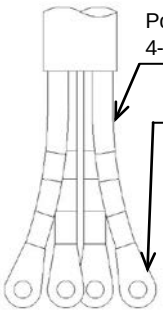
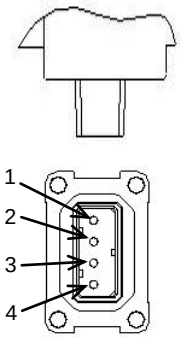
<tr><td>Power connector</td><td> 

Power supply lead color assignment
<table>
<tr><th>Lead color</th><th>Signal name</th></tr>
<tr><td>Red</td><td>U</td></tr>
<tr><td>White</td><td>V</td></tr>
<tr><td>Black</td><td>W</td></tr>
<tr><td>Green/yellow</td><td>Earth</td></tr>
</table></td><td> 

Power connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>Earth</td></tr>
<tr><td>2</td><td>U</td></tr>
<tr><td>3</td><td>V</td></tr>
<tr><td>4</td><td>W</td></tr>
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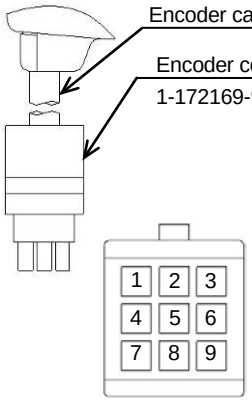
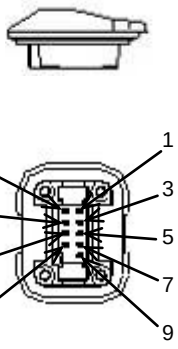
<tr><td>Encoder connector</td><td> 

Encoder connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>MR</td></tr>
<tr><td>2</td><td>MRR</td></tr>
<tr><td>3</td><td>BAT</td></tr>
<tr><td>4</td><td>MD</td></tr>
<tr><td>5</td><td>MDR</td></tr>
<tr><td>6</td><td>CNT</td></tr>
<tr><td>7</td><td>P5</td></tr>
<tr><td>8</td><td>LG</td></tr>
<tr><td>9</td><td>SHD</td></tr>
</table></td><td> 

Encoder connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td></td></tr>
<tr><td>2</td><td>BAT</td></tr>
<tr><td>3</td><td>P5</td></tr>
<tr><td>4</td><td>MRR</td></tr>
<tr><td>5</td><td>MR</td></tr>
<tr><td>6</td><td>LG</td></tr>
<tr><td>7</td><td></td></tr>
<tr><td>8</td><td></td></tr>
<tr><td>9</td><td>SHD</td></tr>
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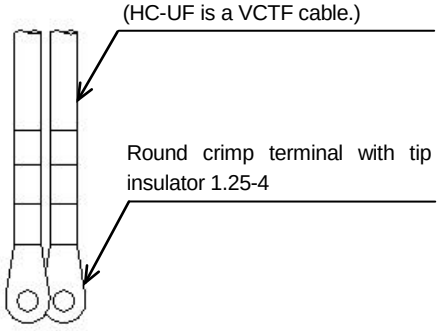
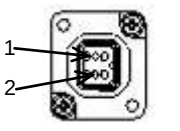
<tr><td>Electromagnetic brake connector</td><td> 
</td><td> 

Electromagnetic brake connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>B1</td></tr>
<tr><td>2</td><td>B2</td></tr>
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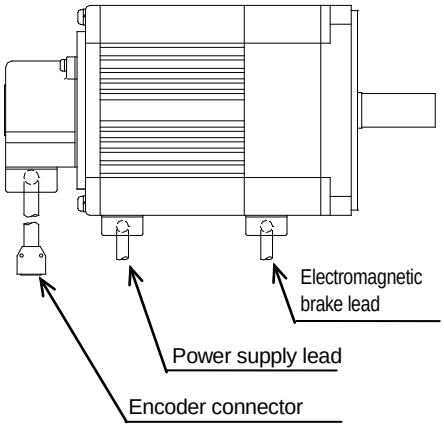
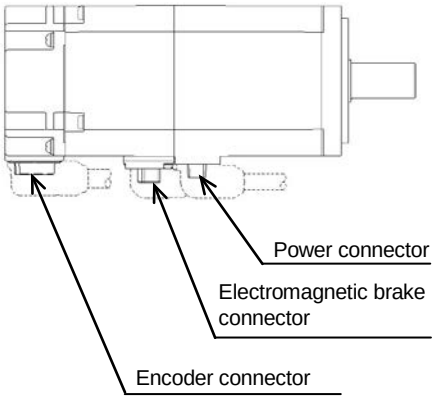
(3) HA-FH motor

<table>
<tr><td></td><td>MR-H series (HA-FH)</td><td>MR-J4 series (HG-KR)</td></tr>
<tr><td>Motor appearance</td><td> 
</td><td> 
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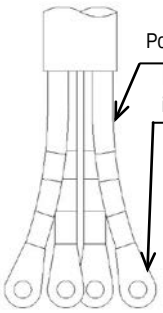
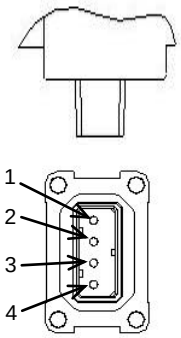
<tr><td>Power connector</td><td> 

Power supply lead color assignment
<table>
<tr><th>Lead color</th><th>Signal name</th></tr>
<tr><td>Red</td><td>U</td></tr>
<tr><td>White</td><td>V</td></tr>
<tr><td>Black</td><td>W</td></tr>
</table></td><td> 

Power connector pin assignment
<table>
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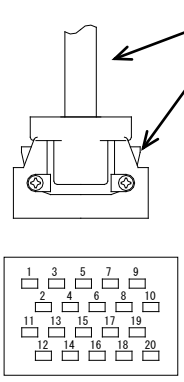
<tr><td>1</td><td>Earth</td></tr>
<tr><td>2</td><td>U</td></tr>
<tr><td>3</td><td>V</td></tr>
<tr><td>4</td><td>W</td></tr>
</table></td></tr>
<tr><td>Encoder connector</td><td> 

Encoder connector pin assignment
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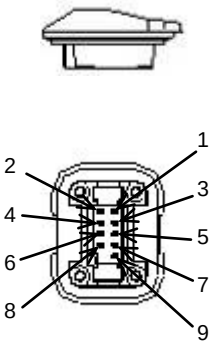
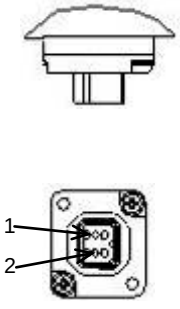
<tr><td>2</td><td>COM</td><td>12</td><td>MD</td></tr>
<tr><td>3</td><td>MRR</td><td>13</td><td>MDR</td></tr>
<tr><td>4</td><td>MR</td><td>14</td><td></td></tr>
<tr><td>5</td><td></td><td>15</td><td></td></tr>
<tr><td>6</td><td></td><td>16</td><td></td></tr>
<tr><td>7</td><td>Vcc</td><td>17</td><td></td></tr>
<tr><td>8</td><td>Vcc</td><td>18</td><td></td></tr>
<tr><td>9</td><td></td><td>19</td><td></td></tr>
<tr><td>10</td><td>CONTROL</td><td>20</td><td>Shield</td></tr>
</table></td><td> 

Encoder connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td></td></tr>
<tr><td>2</td><td>BAT</td></tr>
<tr><td>3</td><td>P5</td></tr>
<tr><td>4</td><td>MRR</td></tr>
<tr><td>5</td><td>MR</td></tr>
<tr><td>6</td><td>LG</td></tr>
<tr><td>7</td><td></td></tr>
<tr><td>8</td><td></td></tr>
<tr><td>9</td><td>SHD</td></tr>
</table></td></tr>
<tr><td>Electromagnetic brake connector</td><td>
</td><td> 

Electromagnetic brake connector
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>B1</td></tr>
<tr><td>2</td><td>B2</td></tr>
</table></td></tr>
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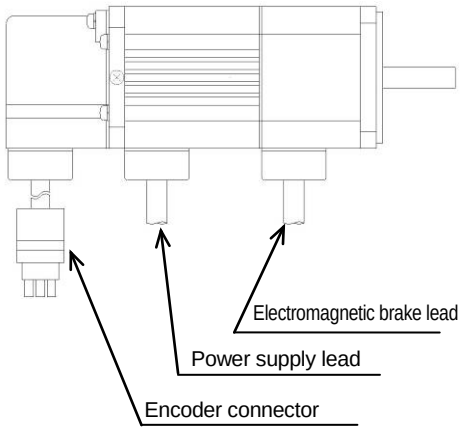
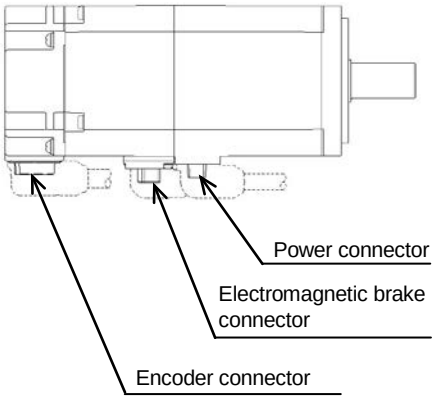
(4) HA-FF motor

<table>
<tr><td></td><td>MR-H series (HA-FF)</td><td>MR-J4 series (HG-KR)</td></tr>
<tr><td>Motor appearance</td><td> 
</td><td> 
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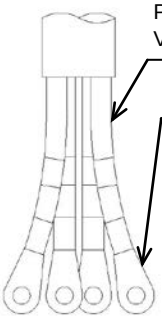
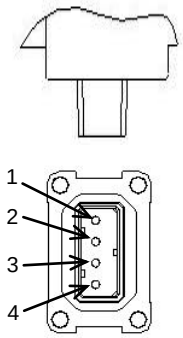
<tr><td>Power connector</td><td> 

Power supply lead color assignment
<table>
<tr><th>Lead color</th><th>Signal name</th></tr>
<tr><td>Red</td><td>U</td></tr>
<tr><td>White</td><td>V</td></tr>
<tr><td>Black</td><td>W</td></tr>
</table></td><td> 

Power connector pin assignment
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<tr><td>2</td><td>U</td></tr>
<tr><td>3</td><td>V</td></tr>
<tr><td>4</td><td>W</td></tr>
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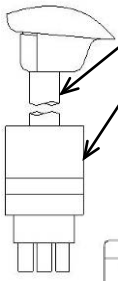
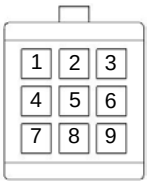
<tr><td>Encoder connector</td><td> 



Encoder connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>MR</td></tr>
<tr><td>2</td><td>MRR</td></tr>
<tr><td>3</td><td>BAT</td></tr>
<tr><td>4</td><td>MD</td></tr>
<tr><td>5</td><td>MDR</td></tr>
<tr><td>6</td><td>CNT</td></tr>
<tr><td>7</td><td>P5</td></tr>
<tr><td>8</td><td>LG</td></tr>
<tr><td>9</td><td>SHD</td></tr>
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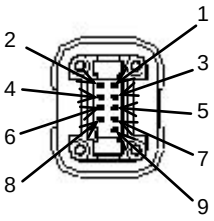

Encoder connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td></td></tr>
<tr><td>2</td><td>BAT</td></tr>
<tr><td>3</td><td>P5</td></tr>
<tr><td>4</td><td>MRR</td></tr>
<tr><td>5</td><td>MR</td></tr>
<tr><td>6</td><td>LG</td></tr>
<tr><td>7</td><td></td></tr>
<tr><td>8</td><td></td></tr>
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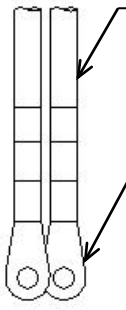
<tr><td>Electromagnetic brake connector</td><td> 
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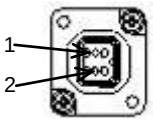

Electromagnetic brake connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>B1</td></tr>
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</table></td></tr>
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(5) HA-SH motor

<table>
<tr><td>Motor appearance</td><td>MR-H series (HA-SH)
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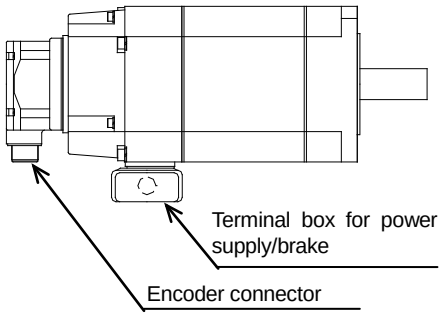
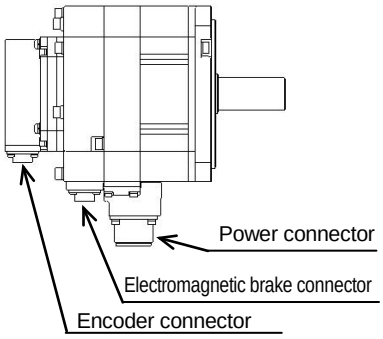
HA-SH52(B) to HA-SH152(B)
HA-SH53(B) to HA-SH153(B)
 
</td><td>MR-J4 series (HG-SR)
Target models: HG-SR81(B)
HG-SR52(B) to HG-SR152(B)
 
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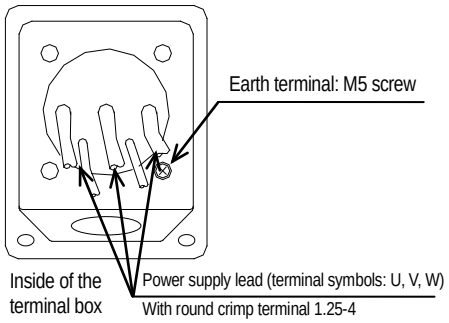
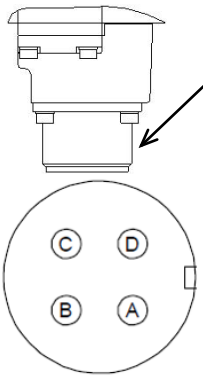
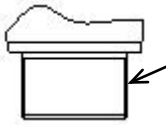
<tr><td>Power connector</td><td> 
</td><td> 

Power connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>A</td><td>U</td></tr>
<tr><td>B</td><td>V</td></tr>
<tr><td>C</td><td>W</td></tr>
<tr><td>D</td><td>Earth</td></tr>
</table></td></tr>
<tr><td>Encoder connector</td><td> 

Encoder connector pin assignment
<table>
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<tr><td>B</td><td>MDR</td></tr>
<tr><td>C</td><td>MR</td></tr>
<tr><td>D</td><td>MRR</td></tr>
<tr><td>E</td><td></td></tr>
<tr><td>F</td><td>BAT</td></tr>
<tr><td>G</td><td>LG</td></tr>
<tr><td>H</td><td></td></tr>
<tr><td>J</td><td></td></tr>
<tr><td>K</td><td></td></tr>
<tr><td>L</td><td></td></tr>
<tr><td>M</td><td>CNT</td></tr>
<tr><td>N</td><td>SHD</td></tr>
<tr><td>P</td><td></td></tr>
<tr><td>R</td><td>LG</td></tr>
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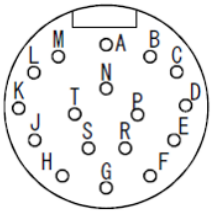
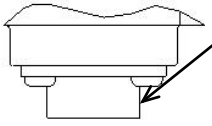

</td><td> 

Encoder connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>MR</td></tr>
<tr><td>2</td><td>MRR</td></tr>
<tr><td>3</td><td></td></tr>
<tr><td>4</td><td>BAT</td></tr>
<tr><td>5</td><td>LG</td></tr>
<tr><td>6</td><td></td></tr>
<tr><td>7</td><td></td></tr>
<tr><td>8</td><td>P5</td></tr>
<tr><td>9</td><td></td></tr>
<tr><td>10</td><td>SHD</td></tr>
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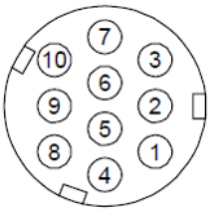
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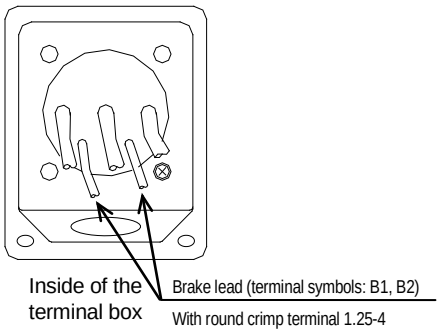
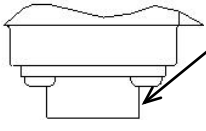
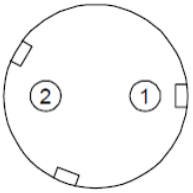
<tr><td>Electromagnetic brake connector (power connector)</td><td> 
</td><td> 



Electromagnetic brake connector pin assignment
<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>1</td><td>B1</td></tr>
<tr><td>2</td><td>B2</td></tr>
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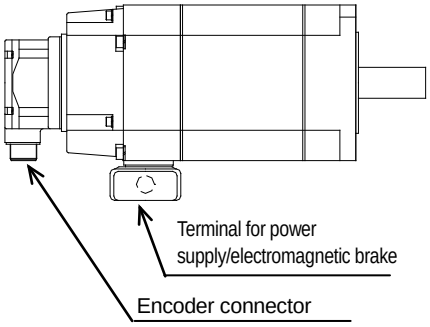
<table>
<tr><td>Motor appearance</td><td>MR-H series (HA-SH)
Target models: HC-SH121(B) to HC-SH301(B)
HC-SH202(B) to HC-SH702(B)
HC-SH203(B), HC-SH353(B)
 
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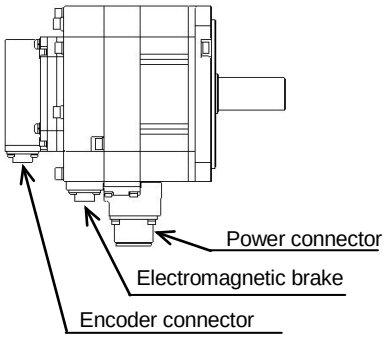
Target models: HG-SR121(B) to HG-SR301(B)
HG-SR202(B) to HG-SR702(B)
 
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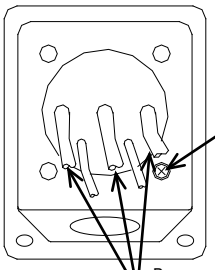
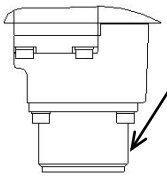
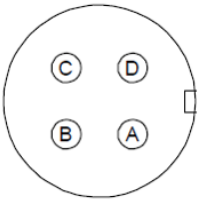
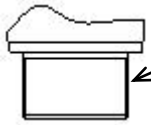
<tr><td>Power connector</td><td> 
</td><td> 

Power connector pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr></table></td></tr>
<tr><td>Encoder connector</td><td> 

Encoder connector pin assignment
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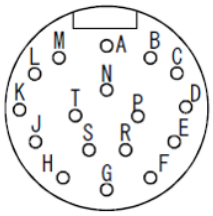
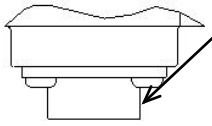
 
</td><td> 

Encoder connector pin assignment
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 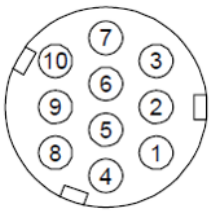
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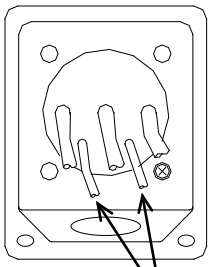
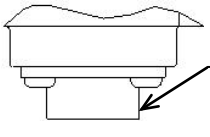
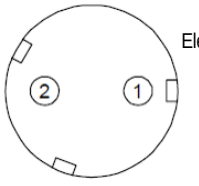
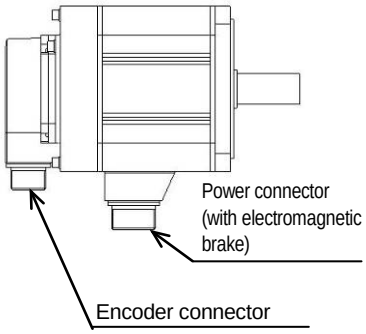
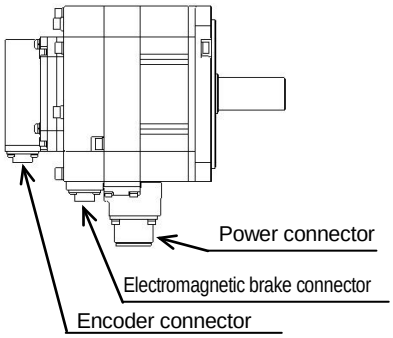
<tr><td>Electromagnetic brake connector</td><td> 
</td><td> 

Electromagnetic brake connector pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>1</td><td>B1</td></tr><tr><td>2</td><td>B2</td></tr></table></td></tr>
</table>

(6) HC-SF motor

<table>
<tr><td>Motor appearance</td><td>MR-H series (HC-SF)
Target models: HC-SF81(B)
HC-SF52(B) to HC-SF152(B)
HC-SF53(B) to HC-SF153(B)
 
</td><td>MR-J4 series (HG-SR)
Target models: HG-SR81(B)
HG-SR52(B) to HG-SR152(B)
 
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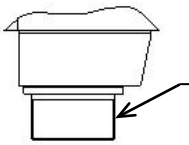
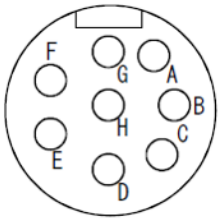
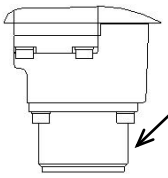
<tr><td>Power connector</td><td> 
Power connector
CE05-2A22-23P
 

Power connector
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td></td></tr><tr><td>H</td><td></td></tr></table></td><td> 
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 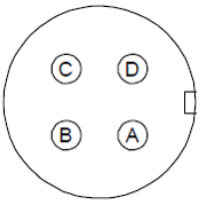

Power connector
pin assignment
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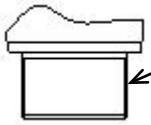
<tr><td>Encoder connector</td><td> 
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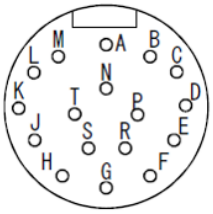
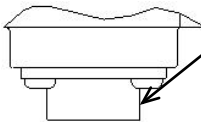
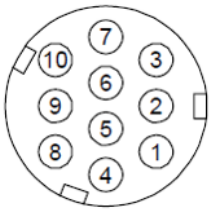
MS3102A20-29P
 

Encoder connector
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td>CNT</td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 
Encoder connector
CMV1-R10P
 

Encoder connector
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>1</td><td>MR</td></tr><tr><td>2</td><td>MRR</td></tr><tr><td>3</td><td></td></tr><tr><td>4</td><td>BAT</td></tr><tr><td>5</td><td>LG</td></tr><tr><td>6</td><td></td></tr><tr><td>7</td><td></td></tr><tr><td>8</td><td>P5</td></tr><tr><td>9</td><td></td></tr><tr><td>10</td><td>SHD</td></tr></table></td></tr>
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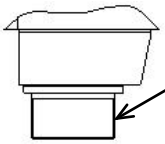
(power connector)</td><td> 
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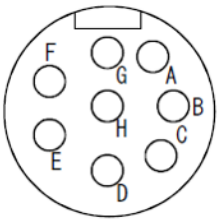
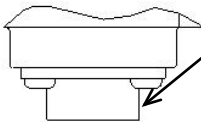
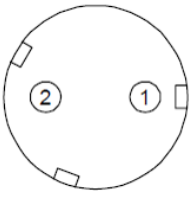
 

Power connector
(with brake)
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td>B1</td></tr><tr><td>H</td><td>B2</td></tr></table></td><td> 
Electromagnetic
brake connector
CMV1-R2P
 

Electromagnetic brake
connector
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>1</td><td>B1</td></tr><tr><td>2</td><td>B2</td></tr></table></td></tr>
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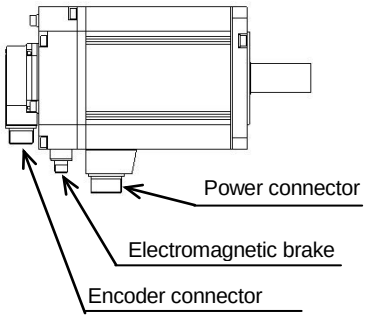
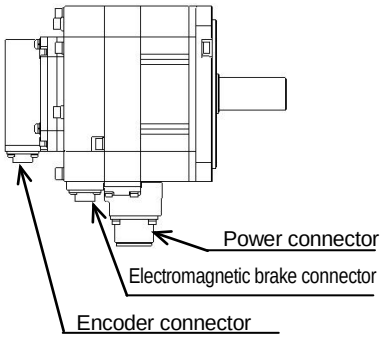
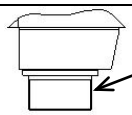
<table>
<tr><td>Motor appearance</td><td>MR-H series (HC-SF)
Target models: HC-SF121(B) to HC-SFS301(B)
HC-SF202(B) to HC-SFS702(B)
HC-SF203(B), HC-SFS353(B)
  </td><td>MR-J4 series (HG-SR)
Target models: HG-SR121(B) to HG-SR301(B)
HG-SR202(B) to HG-SR702(B)
  </td></tr>
<tr><td>Power connector</td><td> 
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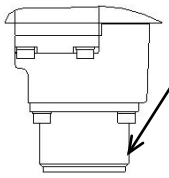
CE05-2A24-10P (5 kW or less)
CE05-2A32-17P (7 kW)
CE05-2A24-10

CE05-2A32-17P

Power connector
pin assignment<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td></td></tr><tr><td>H</td><td></td></tr></table></td><td> 
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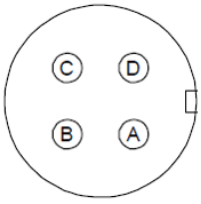
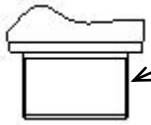
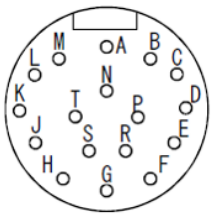
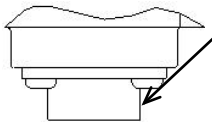
 
Power connector
pin assignment<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr></table></td></tr>
<tr><td>Encoder connector</td><td> 
Encoder connector
MS3102A20-29P
Encoder connector
pin assignment<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td>CNT</td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table>
  </td><td> 
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CMV1-R10P
Encoder connector
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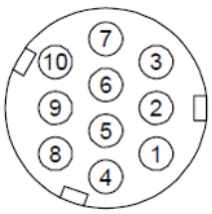
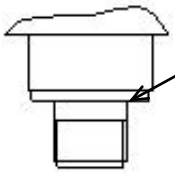
  </td></tr>
<tr><td>Electromagnetic brake connector</td><td> 
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 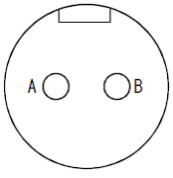
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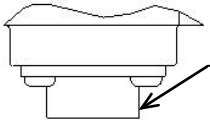
pin assignment<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>B1</td></tr><tr><td>B</td><td>B2</td></tr></table></td><td> 
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 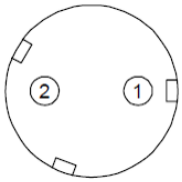
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(7) HC-RF motor

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 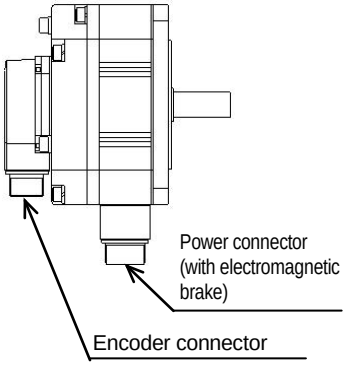
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 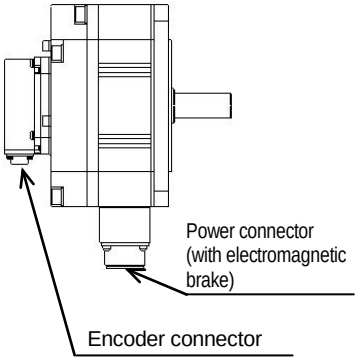
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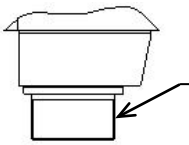
<tr><td>Power connector</td><td> 
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 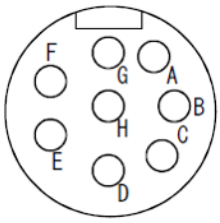

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<tr><td>D</td><td>Earth</td></tr>
<tr><td>E</td><td></td></tr>
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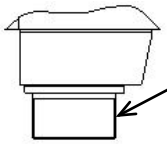
</table></td><td> 
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 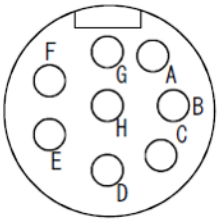

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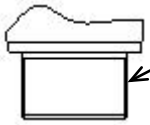
<tr><td>Encoder connector</td><td> 
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 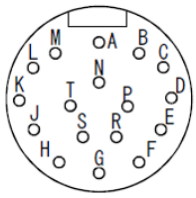

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<tr><td>F</td><td>BAT</td></tr>
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<tr><td>P</td><td></td></tr>
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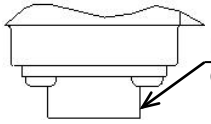
</table></td><td> 
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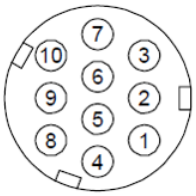
Encoder connector
pin assignment
 

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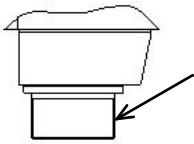
(power connector)</td><td> 
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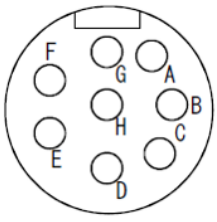
Power connector (with brake)
pin assignment
 

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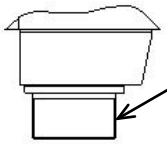
</table></td><td> 
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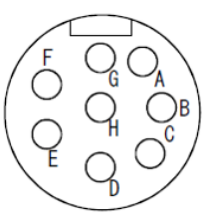
Power connector (with brake)
pin assignment
 

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 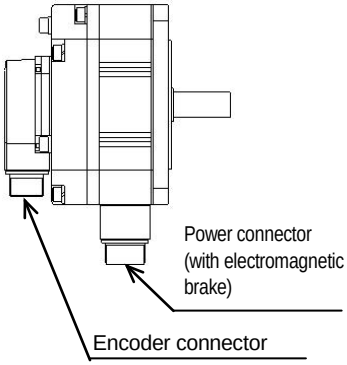
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 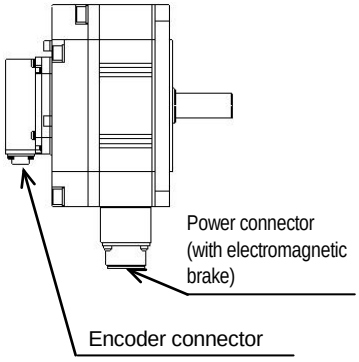
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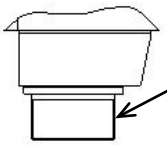
<tr><td>Power connector</td><td> 
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CE05-2A24-10P
Power connector
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 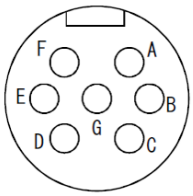

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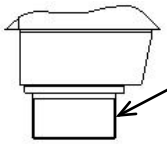
</table></td><td> 
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 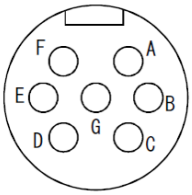

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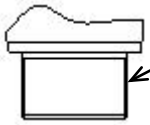
<tr><td>Encoder connector</td><td> 
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 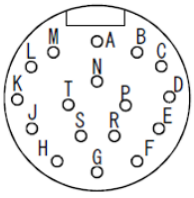

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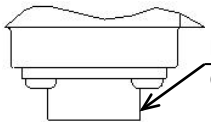
</table></td><td> 
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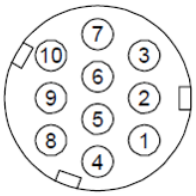
CMV1-R10P
Encoder connector
pin assignment
 

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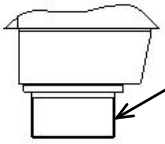
(power connector)</td><td> 
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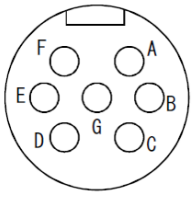
CE05-2A24-10P
Power connector (with brake)
pin assignment
 

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<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>A</td><td>U</td></tr>
<tr><td>B</td><td>V</td></tr>
<tr><td>C</td><td>W</td></tr>
<tr><td>D</td><td>Earth</td></tr>
<tr><td>E</td><td>B1</td></tr>
<tr><td>F</td><td>B2</td></tr>
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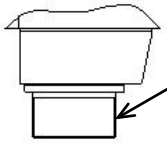
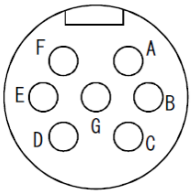
</table></td><td> 
Power connector
CE05-2A24-10P
Power connector (with brake)
pin assignment
 

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<tr><td>B</td><td>V</td></tr>
<tr><td>C</td><td>W</td></tr>
<tr><td>D</td><td>Earth</td></tr>
<tr><td>E</td><td>B1</td></tr>
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(8) HA-LH motor

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 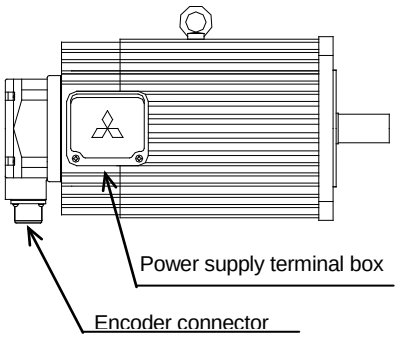
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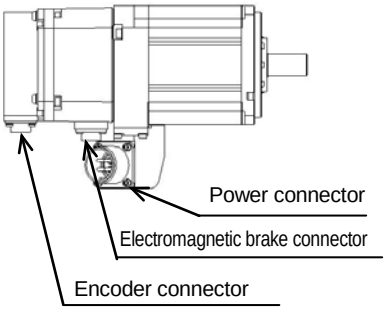
Target models: HG-JR73, JR153
 
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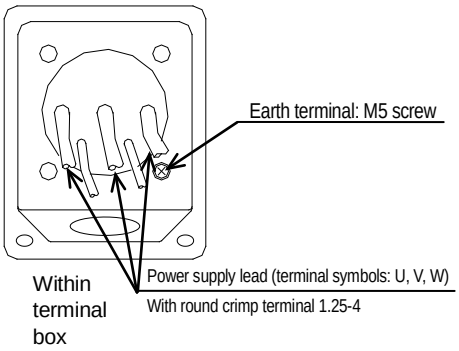
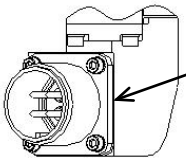
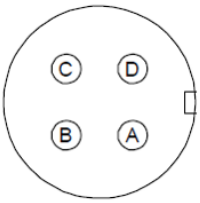
<tr><td>Power connector</td><td> 
</td><td> 

Power connector pin assignment
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B	V
C	W
D	Earth
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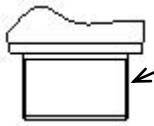
<tr><td>Encoder connector</td><td> 

Encoder connector pin assignment
Pin number	Signal name
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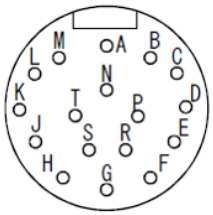
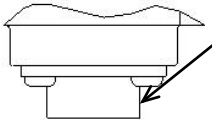
B	MDR
C	MR
D	MRR
E	
F	BAT
G	LG
H	
J	
K	
L	
M	
N	SHD
P	
R	LG
S	P5
T	

</td><td> 

Encoder connector pin assignment
Pin number	Signal name
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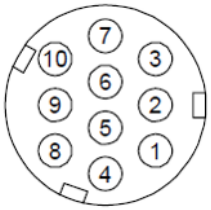
2	MRR
3	
4	BAT
5	LG
6	
7	
8	P5
9	
10	SHD

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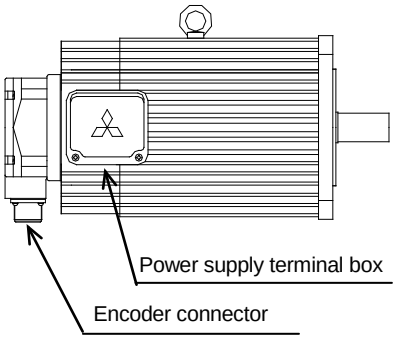
Target models: HA-LH152 to HA-LH502
 
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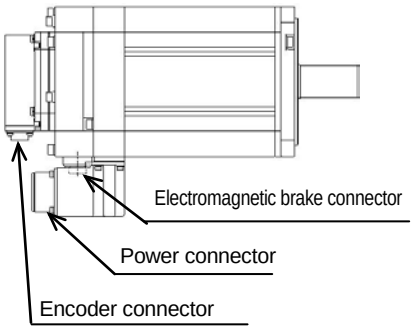
Target models: HG-JR353, JR503, JR703
 
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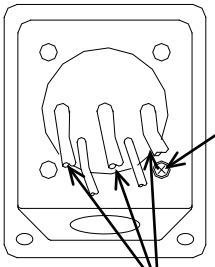
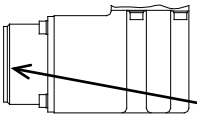
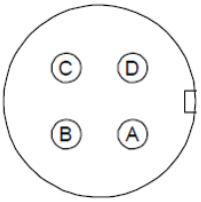
<tr><td>Power connector</td><td> 
</td><td> 

Power connector pin assignment
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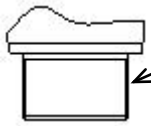
<tr><td>Encoder connector</td><td> 

Encoder connector pin assignment
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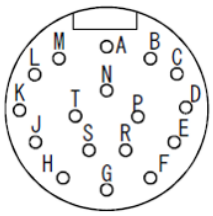
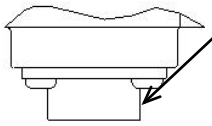
 
</td><td> 

Encoder connector pin assignment
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 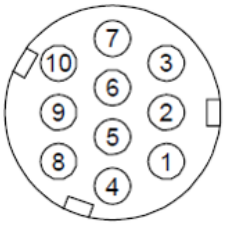
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 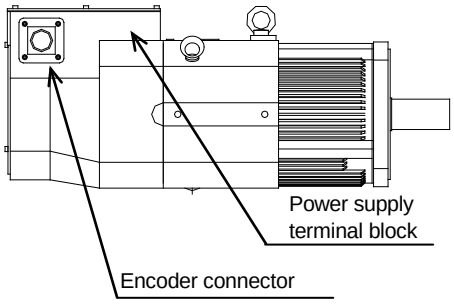
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 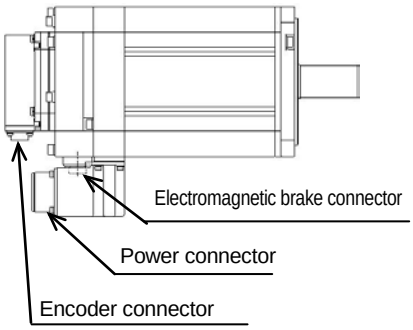
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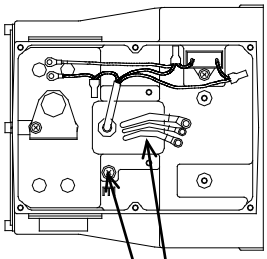
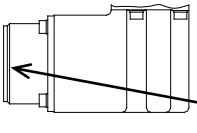
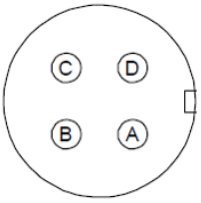
<tr><td>Power connector</td><td> 
</td><td> 

Power connector
pin assignment
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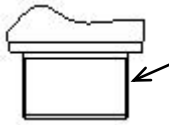
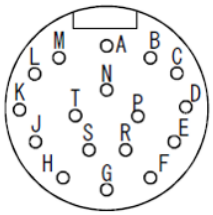
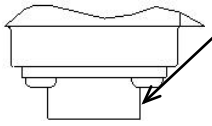
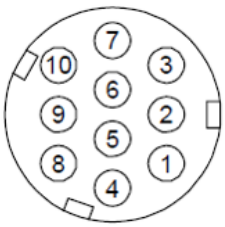
<tr><td>Encoder connector</td><td> 

Encoder connector
pin assignment
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td>CNT</td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

Encoder connector
pin assignment
 

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(9) HA-UH motor

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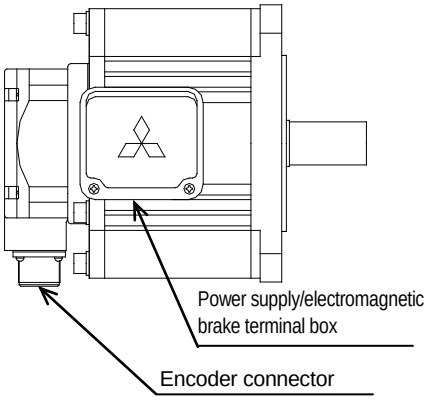
Target models: HA-UH32(B) to HA-UH152(B)
 
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 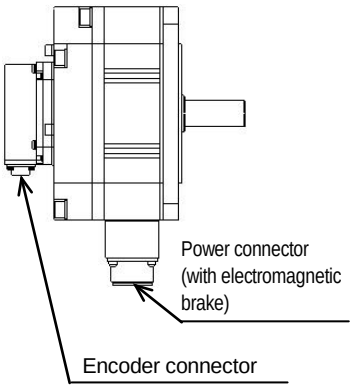
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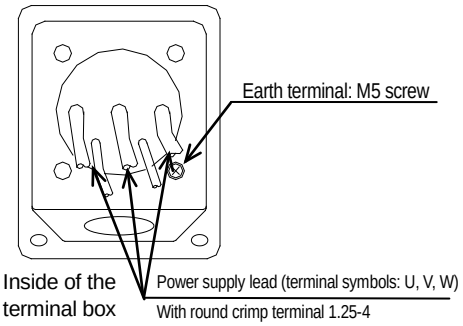
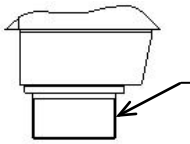
<tr><td>Power connector</td><td> 
</td><td> 

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 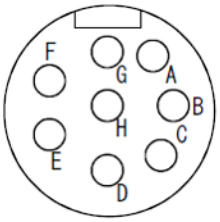

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<tr><td>B</td><td>V</td></tr>
<tr><td>C</td><td>W</td></tr>
<tr><td>D</td><td>Earth</td></tr>
<tr><td>E</td><td></td></tr>
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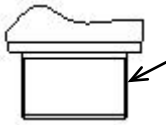
<tr><td>Encoder connector</td><td> 

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 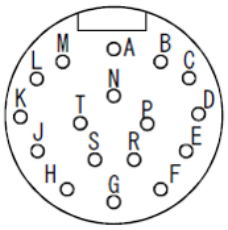

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<tr><td>C</td><td>MR</td></tr>
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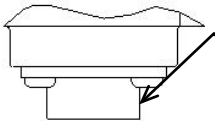
</table></td><td> 

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 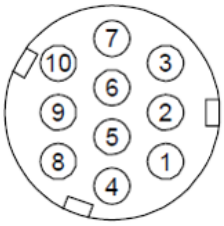

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<tr><td>3</td><td></td></tr>
<tr><td>4</td><td>BAT</td></tr>
<tr><td>5</td><td>LG</td></tr>
<tr><td>6</td><td></td></tr>
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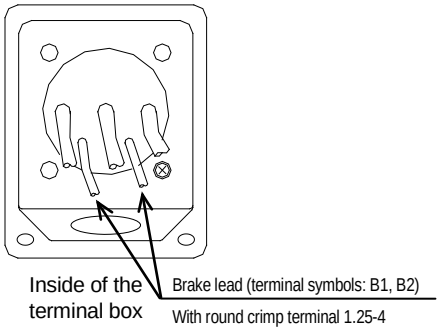
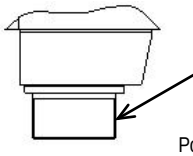
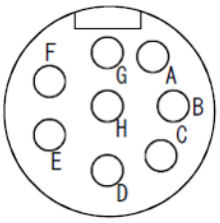
<tr><td>Electromagnetic brake connector (power connector)</td><td> 
</td><td> 

Power connector (with brake) pin assignment
 

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<tr><td>B</td><td>V</td></tr>
<tr><td>C</td><td>W</td></tr>
<tr><td>D</td><td>Earth</td></tr>
<tr><td>E</td><td></td></tr>
<tr><td>F</td><td></td></tr>
<tr><td>G</td><td>B1</td></tr>
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 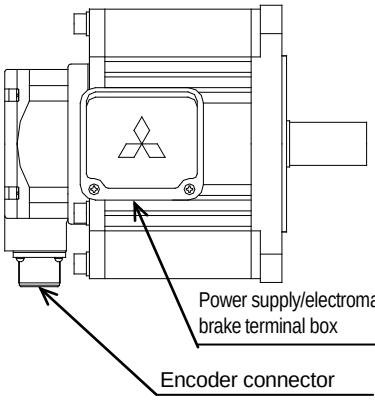
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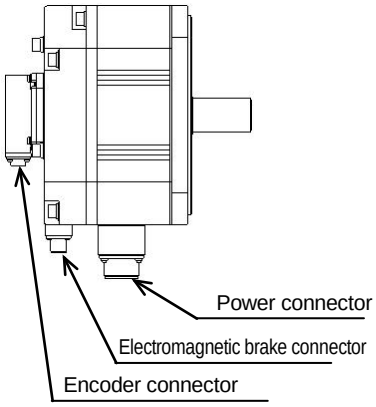
Target models: HG-UR202(B) to HG-UR502(B)
 
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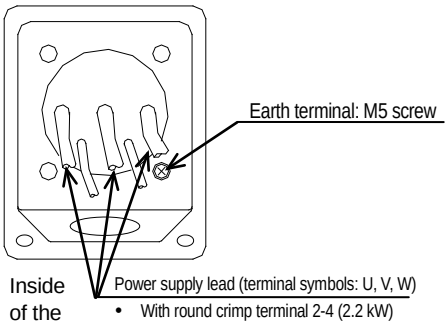
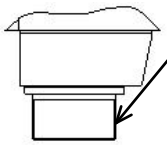
<tr><td>Power connector</td><td> 
</td><td> 

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 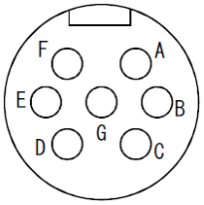

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<tr><td>C</td><td>W</td></tr>
<tr><td>D</td><td>Earth</td></tr>
<tr><td>E</td><td></td></tr>
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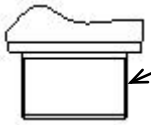
<tr><td>Encoder connector</td><td> 

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 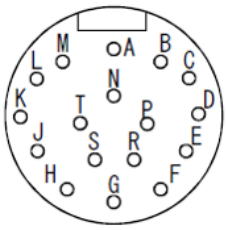

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<tr><td>F</td><td>BAT</td></tr>
<tr><td>G</td><td>LG</td></tr>
<tr><td>H</td><td></td></tr>
<tr><td>J</td><td></td></tr>
<tr><td>K</td><td></td></tr>
<tr><td>L</td><td></td></tr>
<tr><td>M</td><td>CNT</td></tr>
<tr><td>N</td><td>SHD</td></tr>
<tr><td>P</td><td></td></tr>
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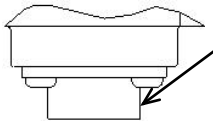
</table></td><td> 

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 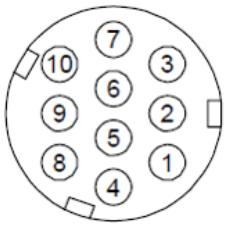

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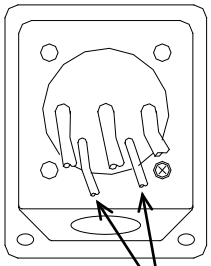
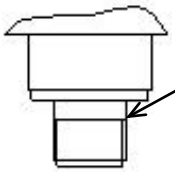
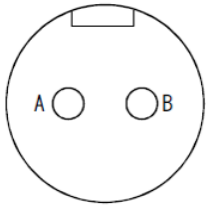
<tr><td>Electromagnetic brake connector</td><td> 
</td><td> 



Electromagnetic brake connector pin assignment
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(10) HC-UF motor

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 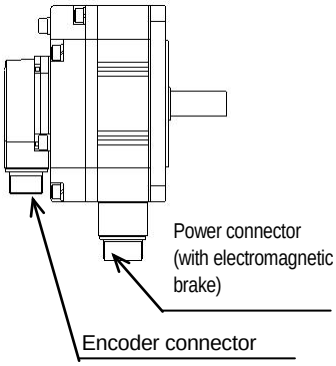
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 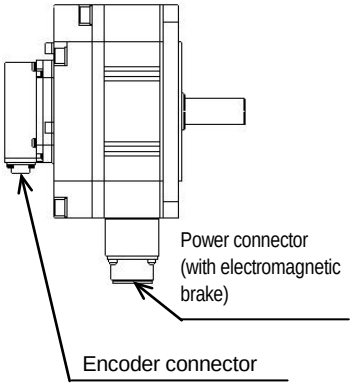
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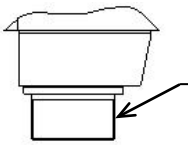
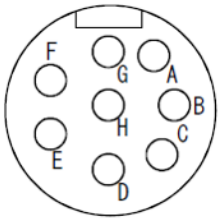
<tr><td>Power connector</td><td> 
Power connector
CE05-2A22-23P
Power connector
pin assignment
 

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<tr><td>D</td><td>Earth</td></tr>
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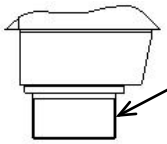
</table></td><td> 
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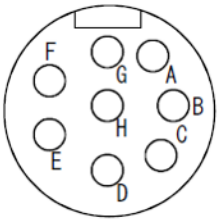
CE05-2A22-23P
Power connector
pin assignment
 

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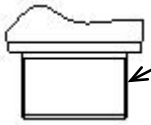
<tr><td>Encoder connector</td><td> 
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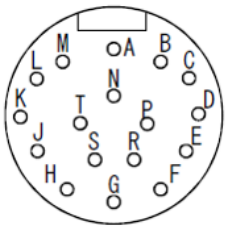
MS3102A20-29P
Encoder connector
pin assignment
 

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<tr><td>K</td><td></td></tr>
<tr><td>L</td><td></td></tr>
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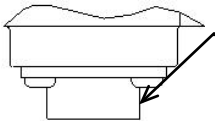
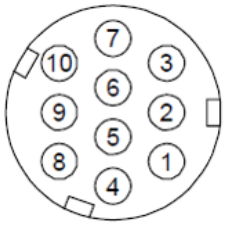
</table></td><td> 
Encoder connector
CMV1-R10P
Encoder connector
pin assignment
 

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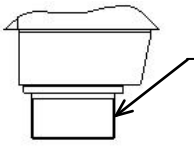
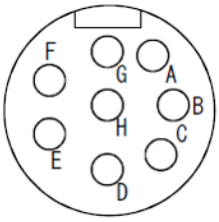
(power connector)</td><td> 
Power connector
CE05-2A22-23P
Power connector (with brake)
pin assignment
 

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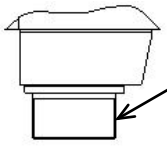
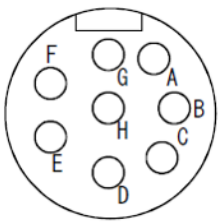
</table></td><td> 
Power connector
CE05-2A22-23P
Power connector (with brake)
pin assignment
 

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 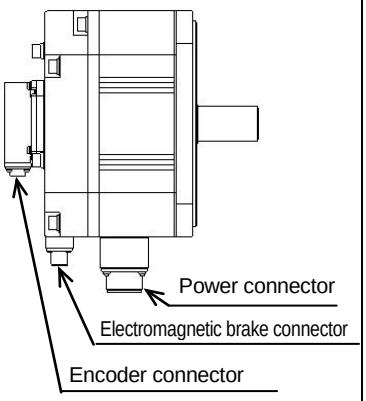
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 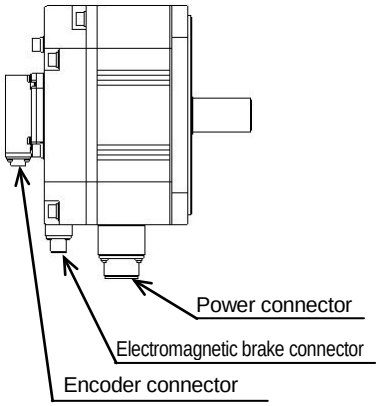
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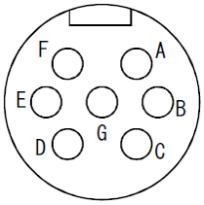
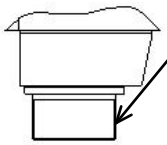
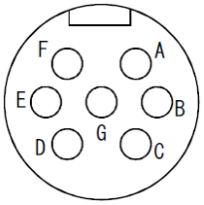
 

Power connector
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td></td></tr><tr><td>G</td><td></td></tr><tr><td>H</td><td></td></tr></table></td><td> 

Power connector
pin assignment
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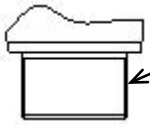
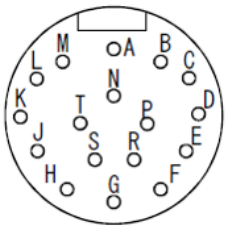
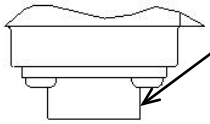
<tr><td>Encoder connector</td><td> 

Encoder connector
pin assignment
 

<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td>CNT</td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

Encoder connector
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 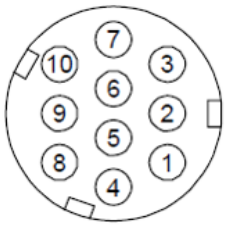

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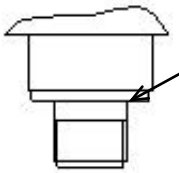
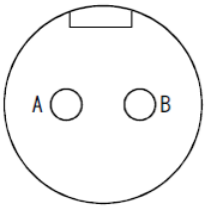
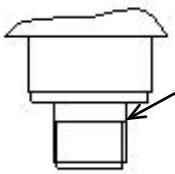
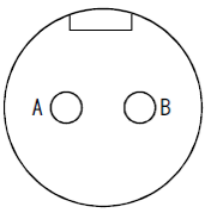
<tr><td>Electromagnetic brake connector</td><td> 

Electromagnetic brake connector
pin assignment
<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>B1</td></tr><tr><td>B</td><td>B2</td></tr></table></td><td> 

Electromagnetic brake connector
pin assignment
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(11) HA-LH motor

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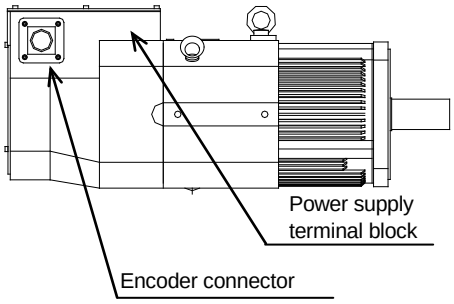
Target models:HA-LH11K2 to HA-LH22K2
 
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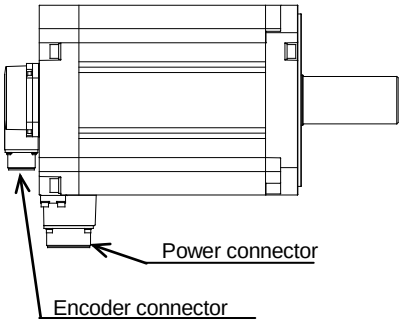
Target models: HG-JR11K1M, HG-JR15K1M
 
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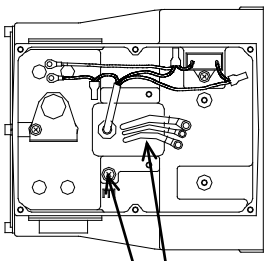
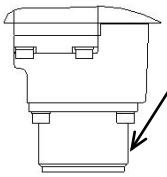
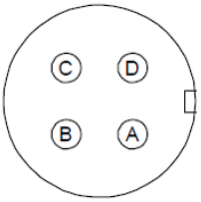
<tr><td>Power connector</td><td> 
</td><td> 

Power connector pin assignment
Pin number	Signal name
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B	V
C	W
D	Earth
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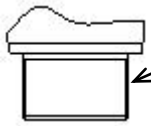
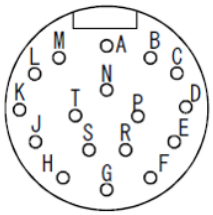
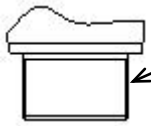
<tr><td>Encoder connector</td><td> 
Encoder connector
MS3102A20-29P
Encoder connector pin assignment
 

Pin number	Signal name
A	MD
B	MDR
C	MR
D	MRR
E	
F	BAT
G	LG
H	
J	
K	
L	
M	CNT
N	SHD
P	
R	LG
S	P5
T	
</td><td> 
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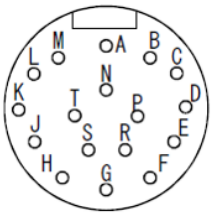
Encoder connector pin assignment
 

Pin number	Signal name
A	
B	
C	MR
D	MRR
E	
F	BAT
G	LG
H	
J	
K	
L	
M	
N	SHD
P	
R	LG
S	P5
T	
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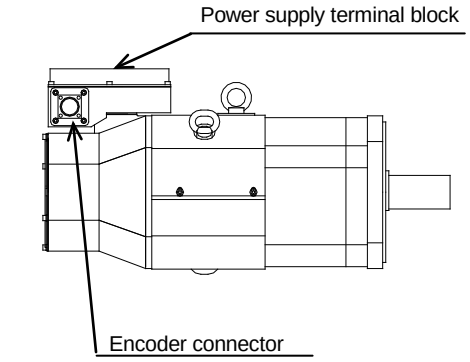
(12) HA-LF motor

<table>
<tr><td>Motor appearance</td><td>MR-H series (HA-LF)
Target models: HA-LF11K1M, LF15K1M
 
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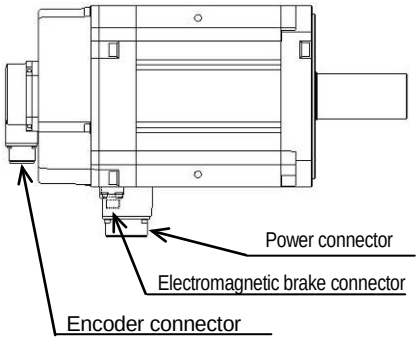
Target models: HG-JR11K1M, JR15K1M
 
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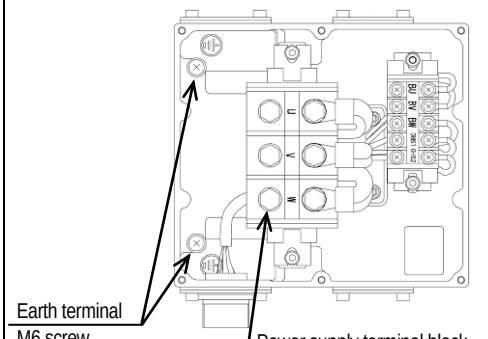
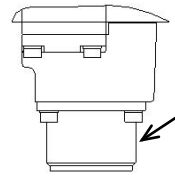
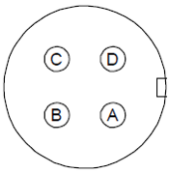
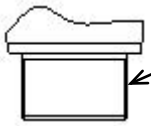
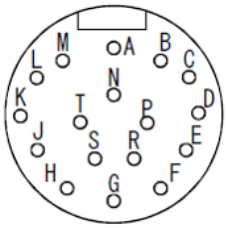
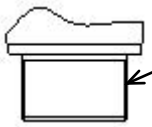
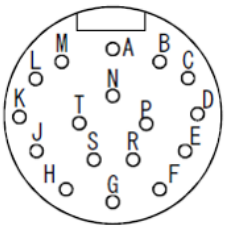
(power supply terminal block)</td><td> 
</td><td> 

Power connector
pin assignment<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>U</td></tr><tr><td>B</td><td>V</td></tr><tr><td>C</td><td>W</td></tr><tr><td>D</td><td>Earth</td></tr></table></td></tr>
<tr><td>Encoder connector</td><td> 

Encoder connector
pin assignment<table><tr><th>Pin number</th><th>Signal name</th></tr><tr><td>A</td><td>MD</td></tr><tr><td>B</td><td>MDR</td></tr><tr><td>C</td><td>MR</td></tr><tr><td>D</td><td>MRR</td></tr><tr><td>E</td><td></td></tr><tr><td>F</td><td>BAT</td></tr><tr><td>G</td><td>LG</td></tr><tr><td>H</td><td></td></tr><tr><td>J</td><td></td></tr><tr><td>K</td><td></td></tr><tr><td>L</td><td></td></tr><tr><td>M</td><td></td></tr><tr><td>N</td><td>SHD</td></tr><tr><td>P</td><td></td></tr><tr><td>R</td><td>LG</td></tr><tr><td>S</td><td>P5</td></tr><tr><td>T</td><td></td></tr></table></td><td> 

Encoder connector
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<table>
<tr><td>Motor appearance</td><td>MR-H series (HA-LF)
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 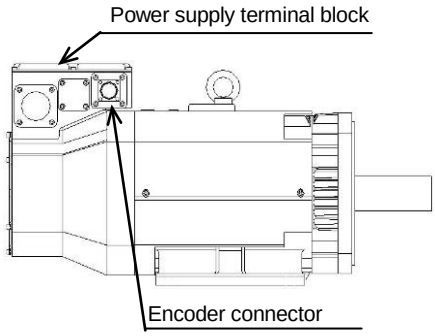
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 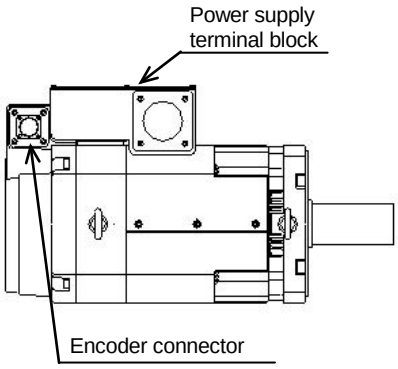
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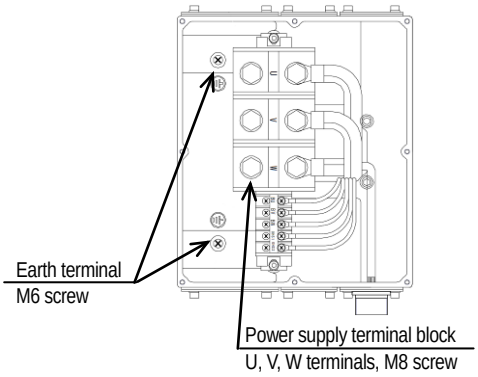
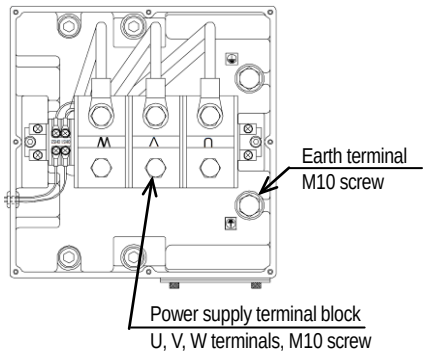
<tr><td>Power connector (power supply terminal block)</td><td> 
</td><td> 
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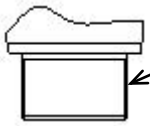
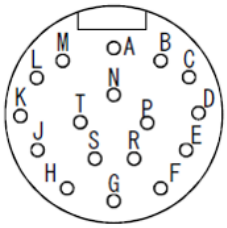
<tr><td>Encoder connector</td><td> 

Encoder connector pin assignment


<table>
<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>A</td><td>MD</td></tr>
<tr><td>B</td><td>MDR</td></tr>
<tr><td>C</td><td>MR</td></tr>
<tr><td>D</td><td>MRR</td></tr>
<tr><td>E</td><td></td></tr>
<tr><td>F</td><td>BAT</td></tr>
<tr><td>G</td><td>LG</td></tr>
<tr><td>H</td><td></td></tr>
<tr><td>J</td><td></td></tr>
<tr><td>K</td><td></td></tr>
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<tr><td>M</td><td></td></tr>
<tr><td>N</td><td>SHD</td></tr>
<tr><td>P</td><td></td></tr>
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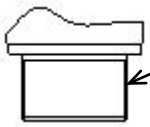
</table></td><td> 

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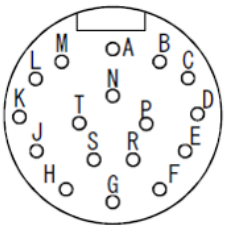

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<tr><th>Pin number</th><th>Signal name</th></tr>
<tr><td>A</td><td></td></tr>
<tr><td>B</td><td></td></tr>
<tr><td>C</td><td>MR</td></tr>
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<tr><td>F</td><td>BAT</td></tr>
<tr><td>G</td><td>LG</td></tr>
<tr><td>H</td><td></td></tr>
<tr><td>J</td><td></td></tr>
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<tr><td>N</td><td>SHD</td></tr>
<tr><td>P</td><td></td></tr>
<tr><td>R</td><td>LG</td></tr>
<tr><td>S</td><td>P5</td></tr>
<tr><td>T</td><td></td></tr>
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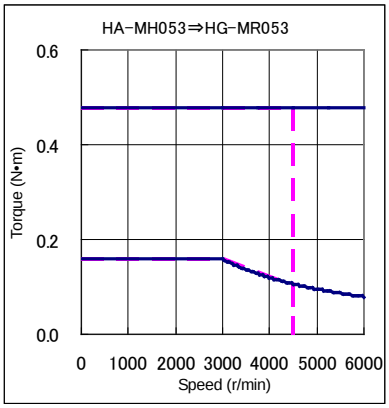
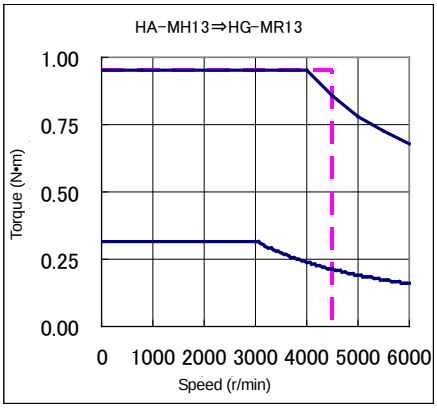
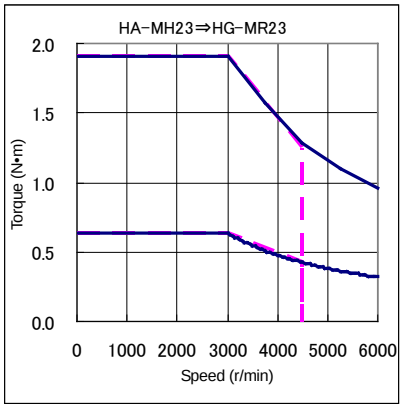
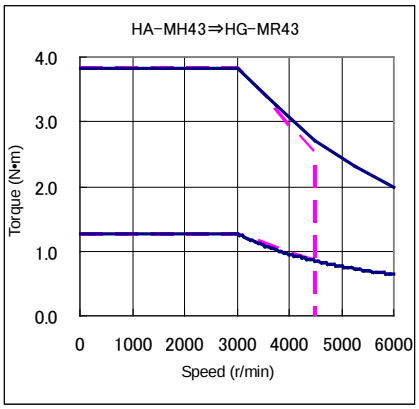
2.2.7 Comparison of servo motor torque characteristics

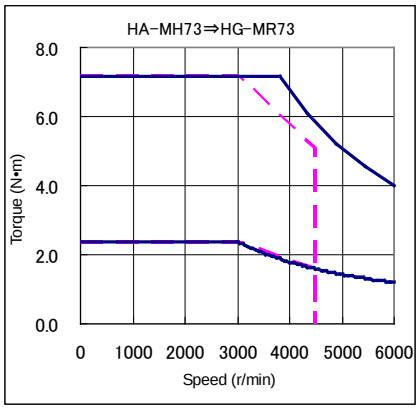
◆ Comparison of torque characteristics between the HG-MR and HA-MH series (—— : HG-MR, - - - - : HA-MH)



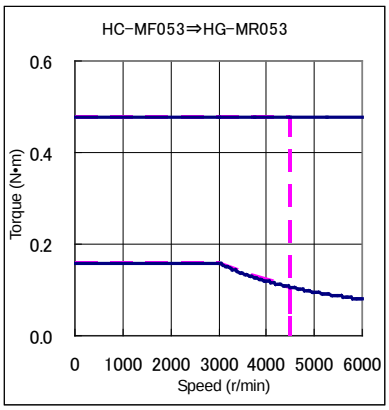


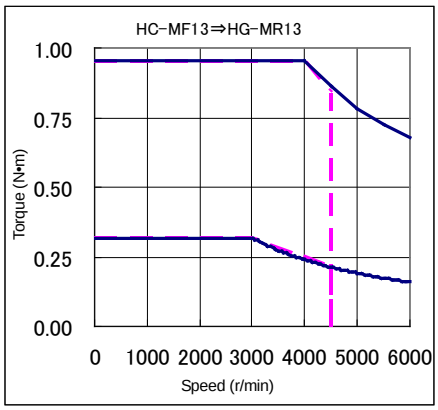


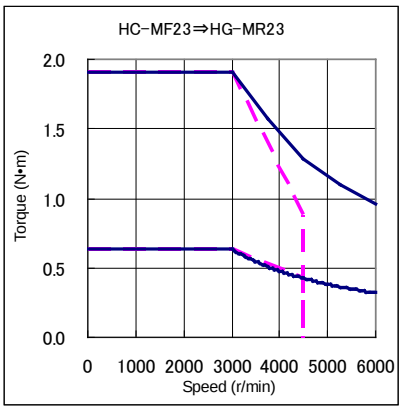


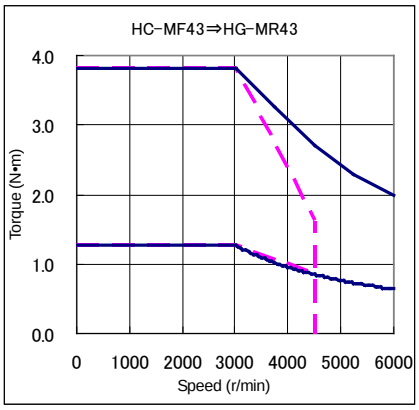


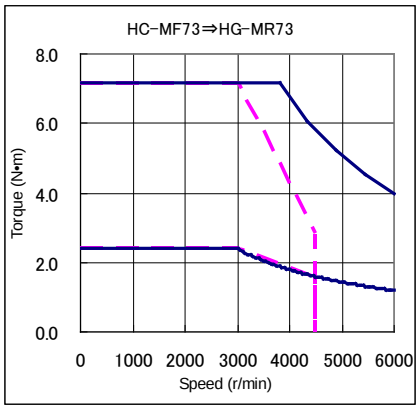
◆ Comparison of torque characteristics between the HG-MR and HC-MF series (—— : HG-MR, - - - - : HC-MF)





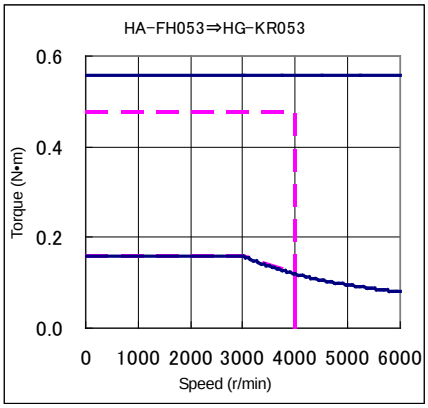


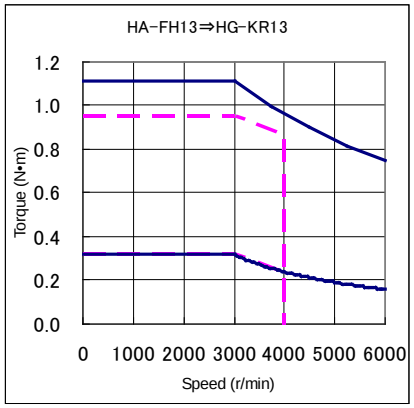


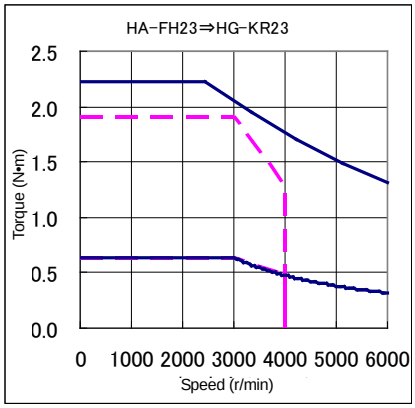


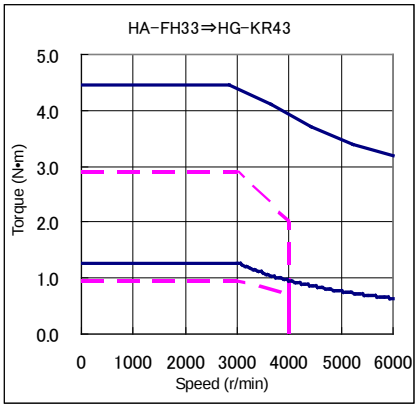
Note 1: The above torque characteristics are for three-phase 200 VAC.

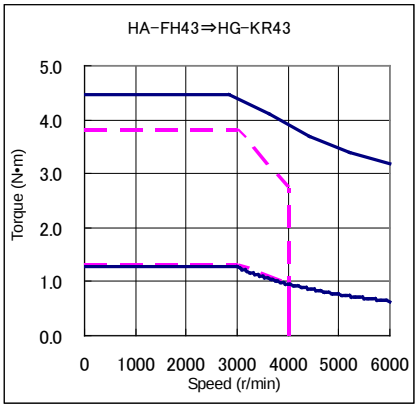
◆ Comparison of torque characteristics between the HG-KR and HA-FH series (—— : HG-KR, - - - - : HA-FH)

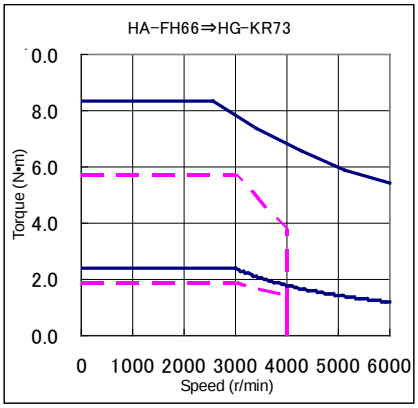




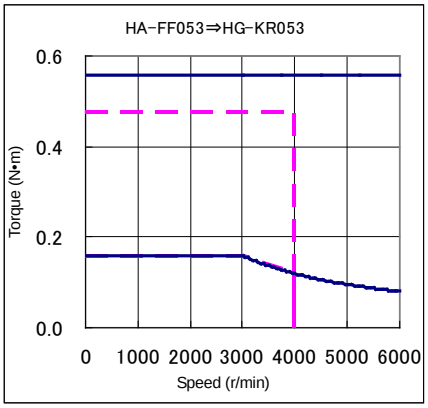


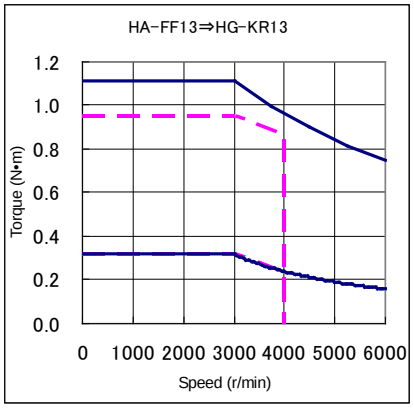


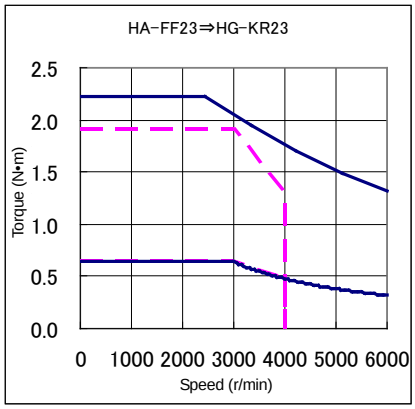


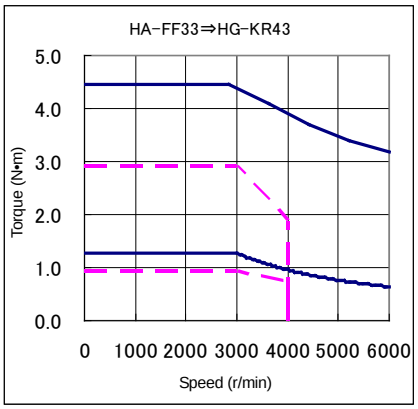


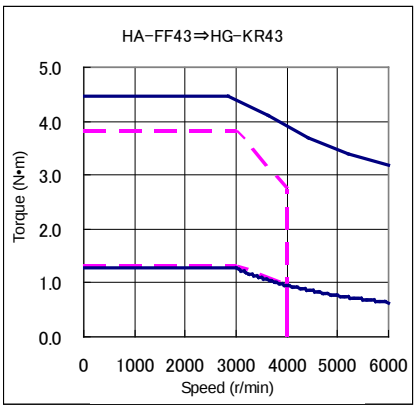
◆ Comparison of torque characteristics between the HG-KR and HA-FF series (—— : HG-KR, - - - - : HA-FF)

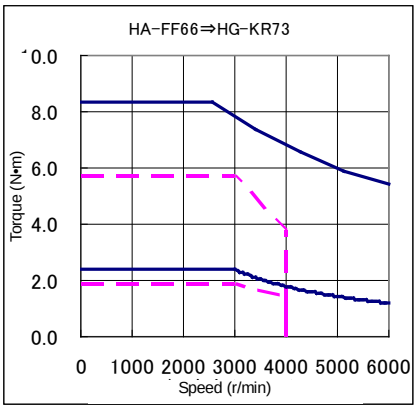






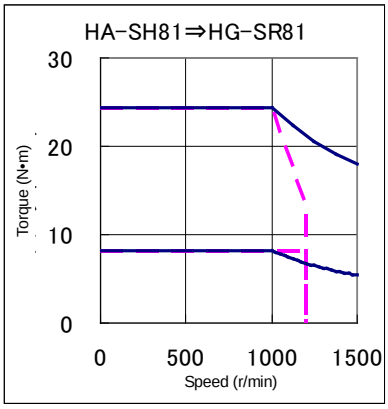


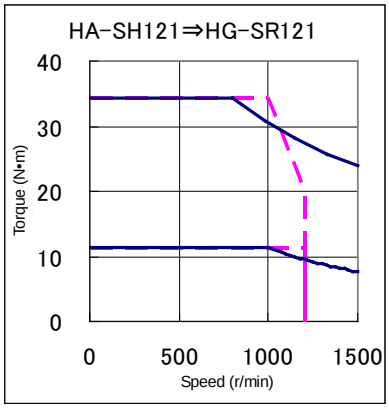


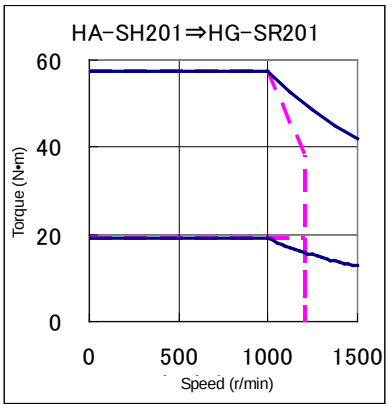


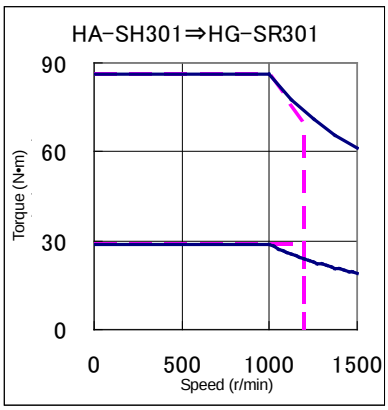
Note 1: The above torque characteristics are for three-phase 200 VAC.

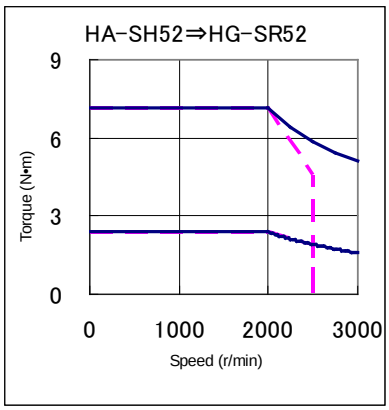
◆ Comparison of torque characteristics between the HG-SR and HA-SH series (—— : HG-SR, - - - - : HA-SH)

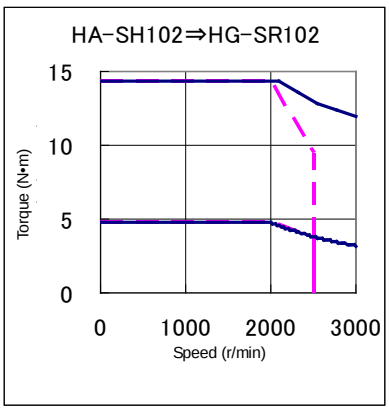


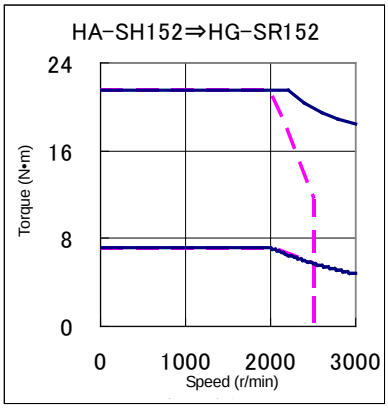


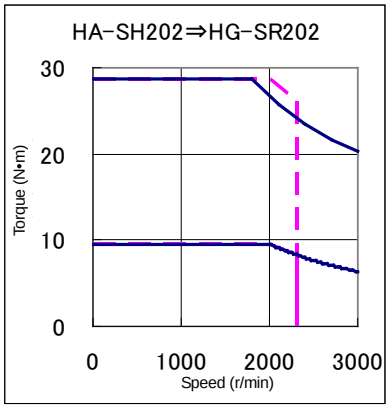


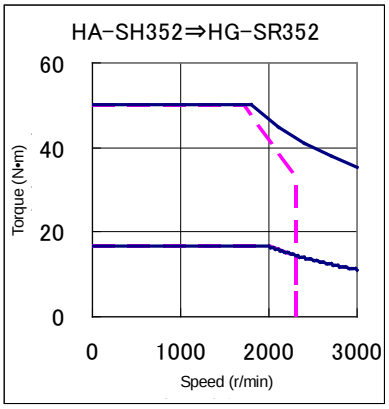


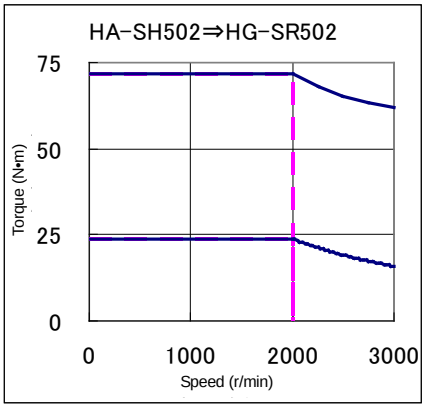


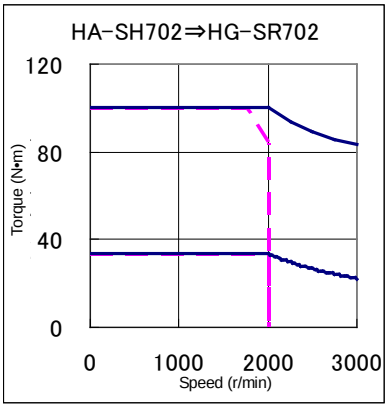


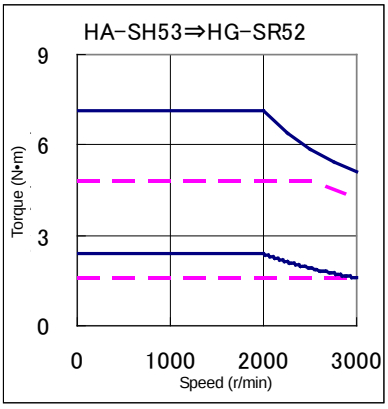






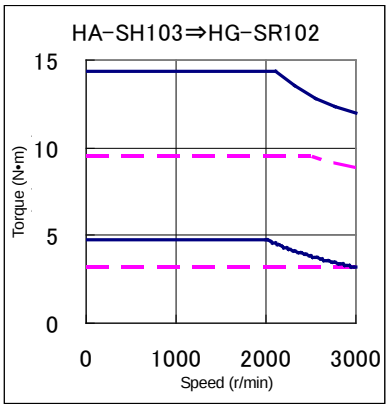


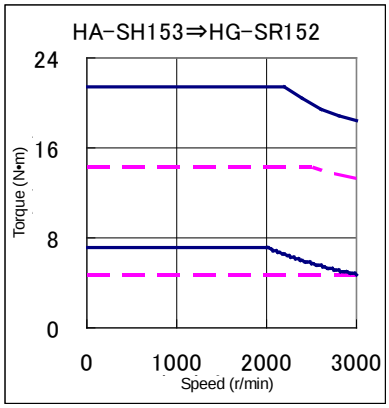


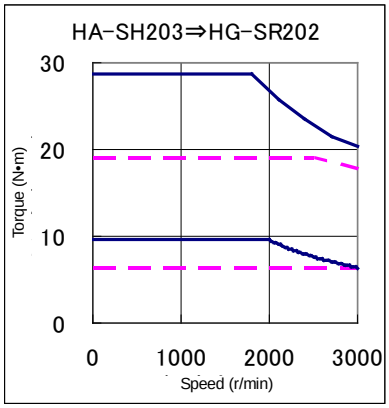


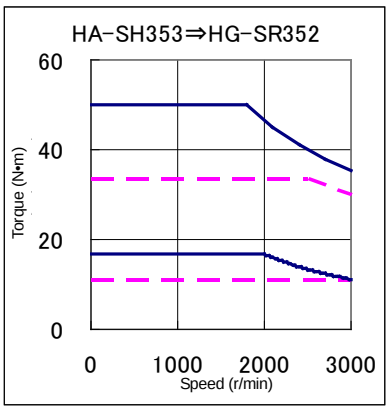
Note 1: The above torque characteristics are for three-phase 200 VAC.

◆ Comparison of torque characteristics between the HG-SR and HA-SH series (—— : HG-SR, - - - - : HA-SH)

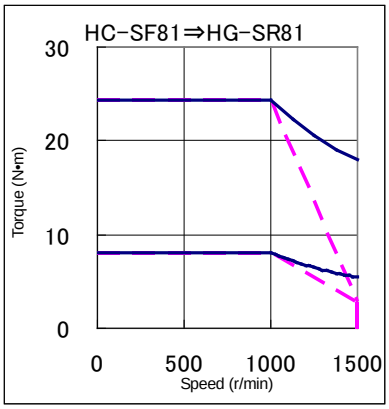


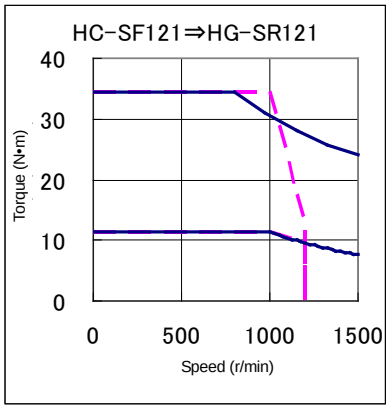


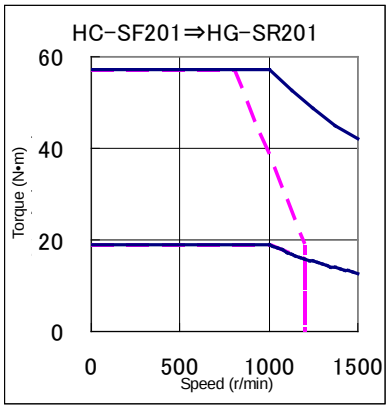


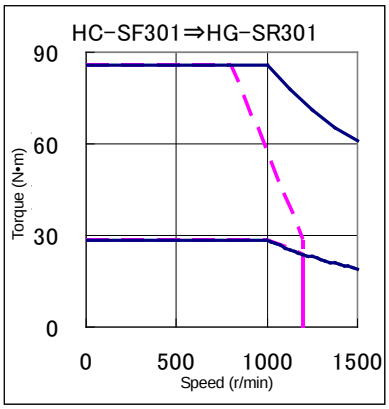


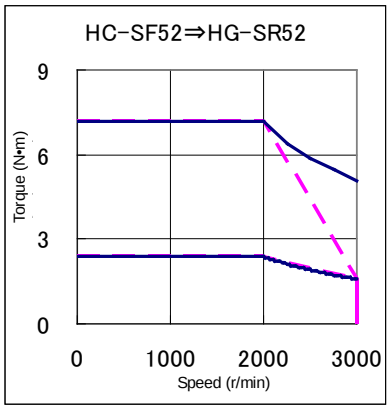
◆ Comparison of torque characteristics between the HG-SR and HC-SF series (—— : HG-SR, - - - - : HC-SF)

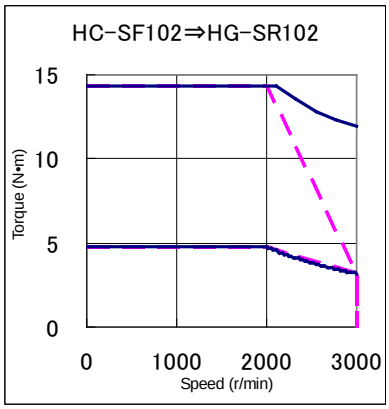






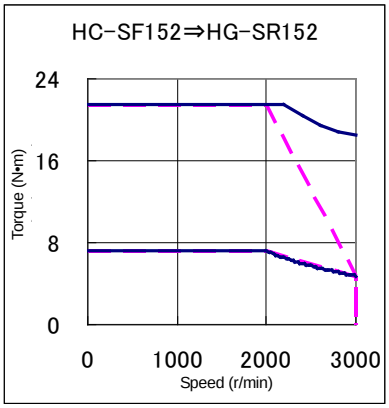


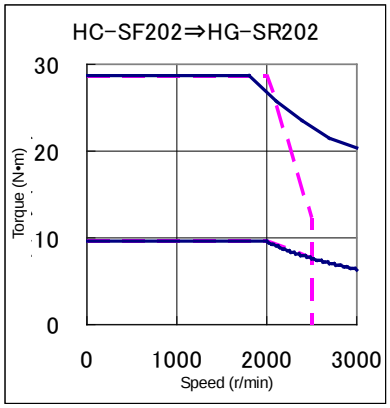


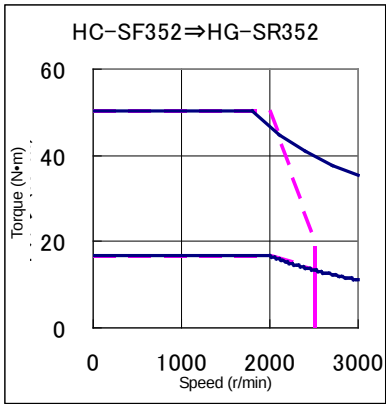


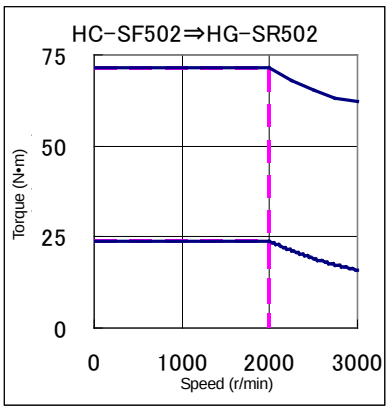
Note 1: The above torque characteristics are for three-phase 200 VAC.

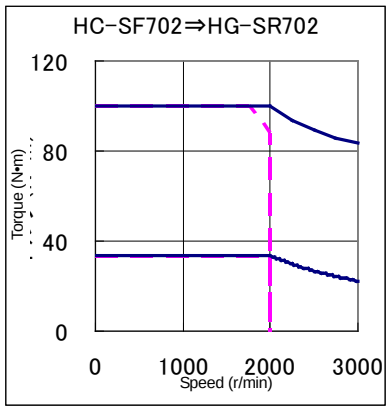
◆ Comparison of torque characteristics between the HG-SR and HC-SF series (—— : HG-SR, - - - - : HC-SF)

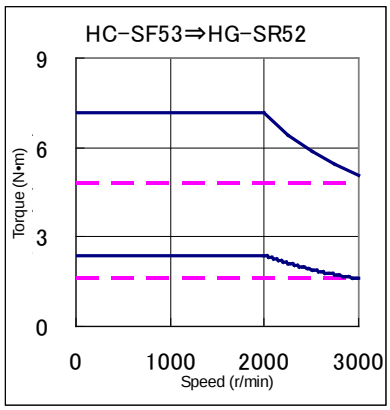


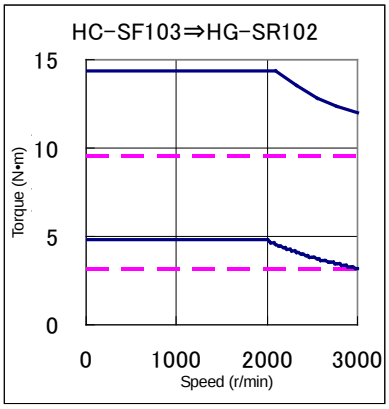


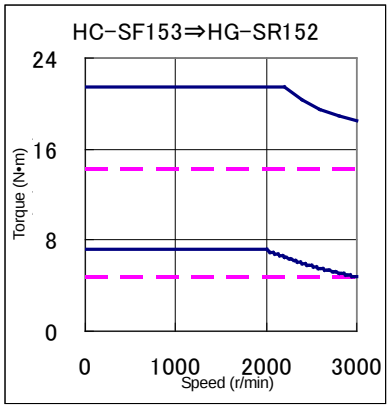


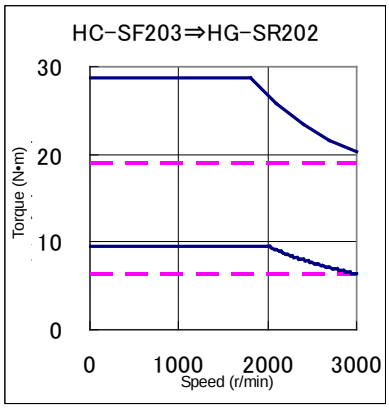


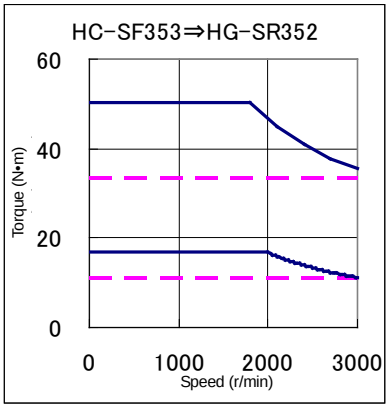






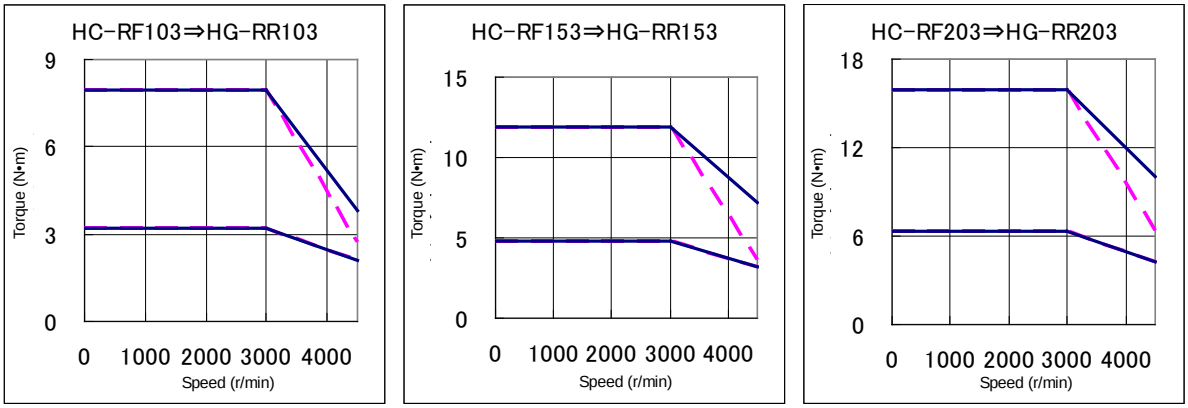


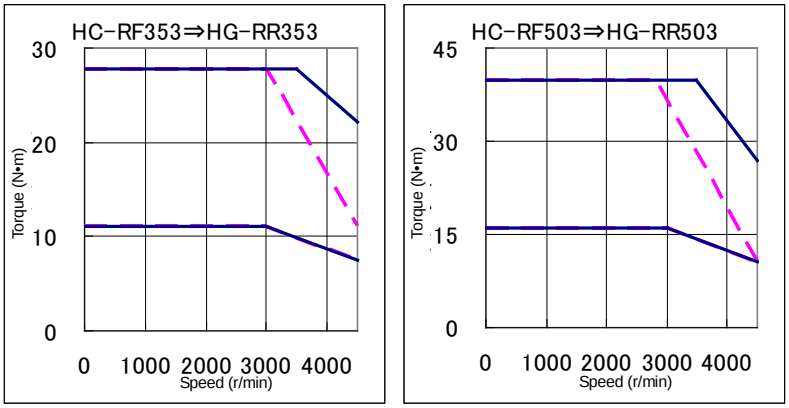




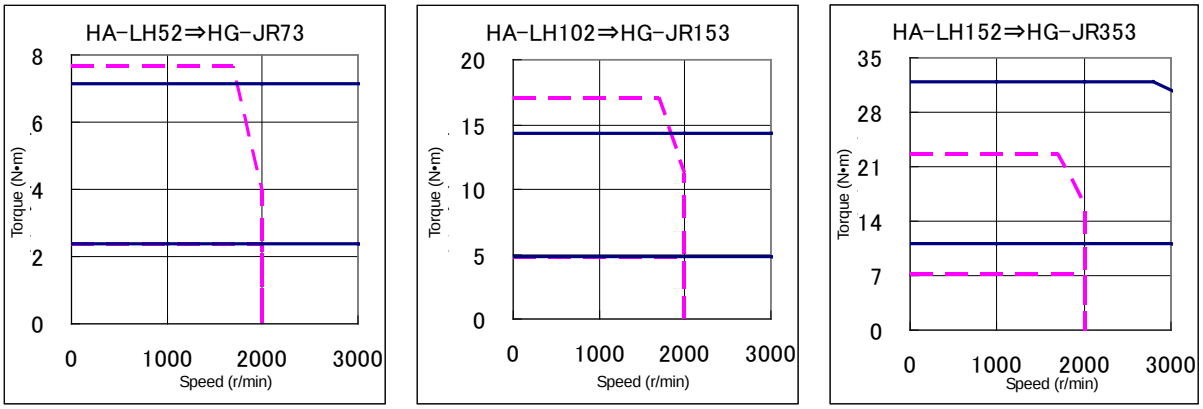
Note 1: The above torque characteristics are for three-phase 200 VAC.

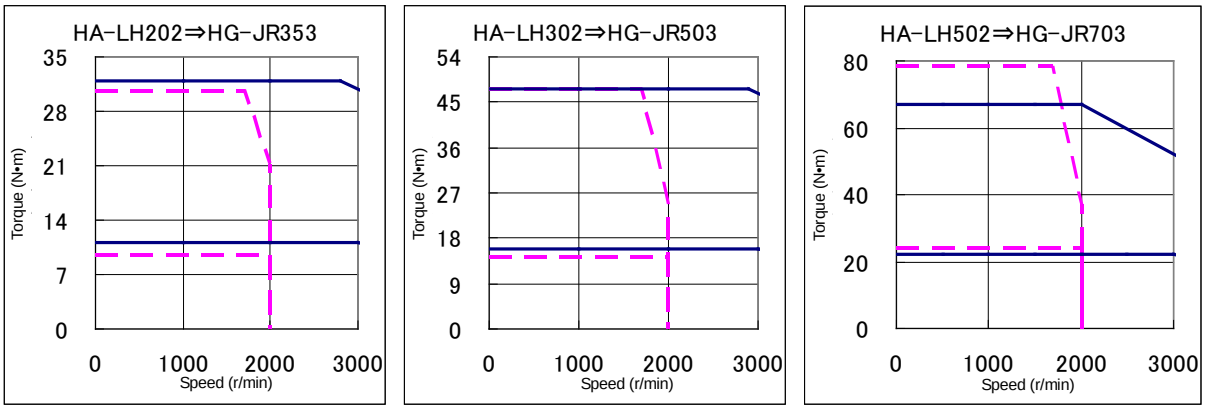
◆ Comparison of torque characteristics between the HG-RR and HC-RF series (——: HG-RR, - - - - : HC-RF)





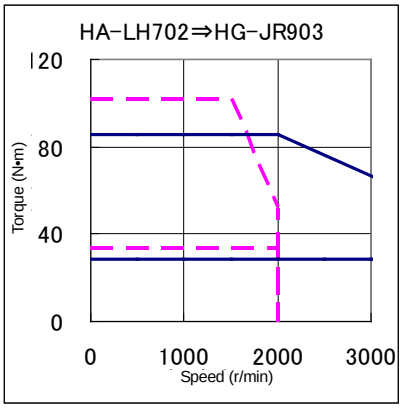
◆ Comparison of torque characteristics between the HG-JR and HA-LH series (—— : HG-JR, - - - - : HA-LH)



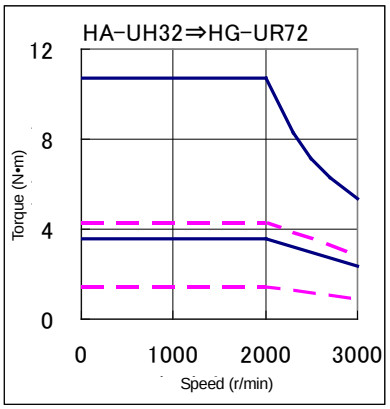


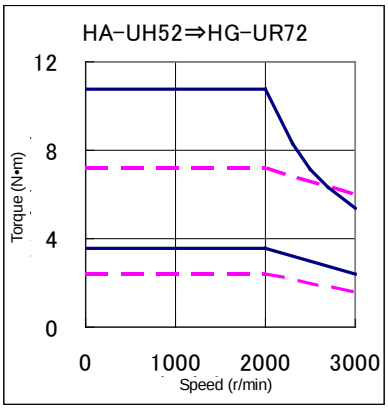
Note 1: The above torque characteristics are for three-phase 200 VAC.

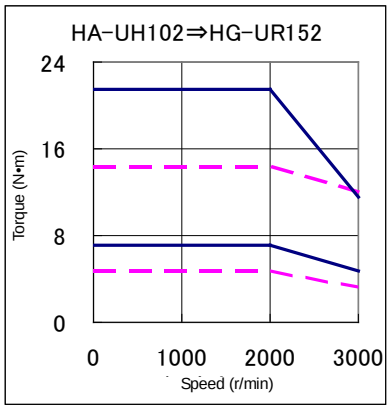
◆ Comparison of torque characteristics between the HG-JR and HA-LH series (—— : HG-JR, - - - - : HA-LH)

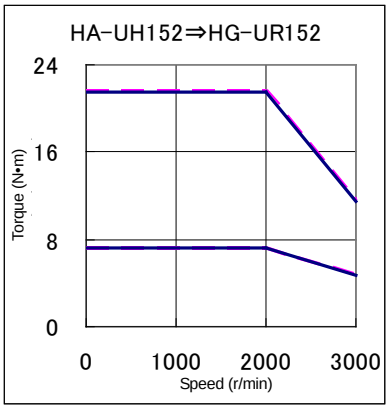


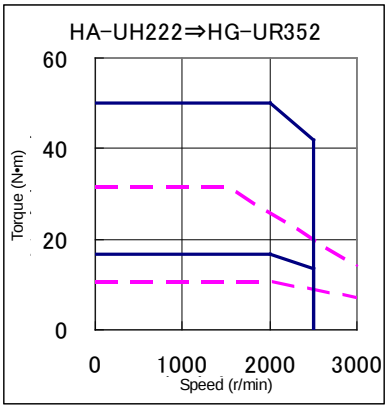
◆ Comparison of torque characteristics between the HG-UR and HA-UH series (——: HG-UR, - - - - : HA-UH)

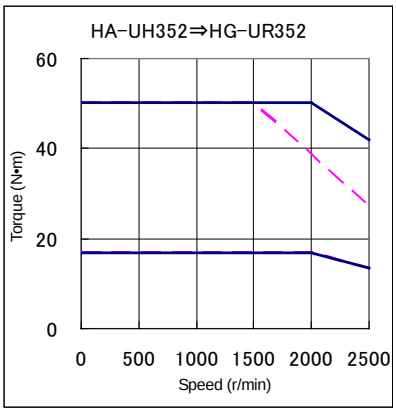


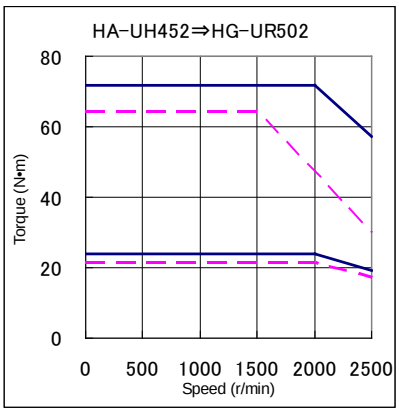






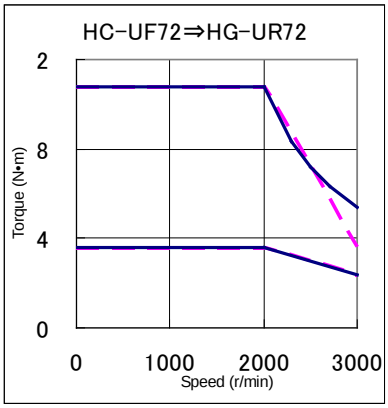


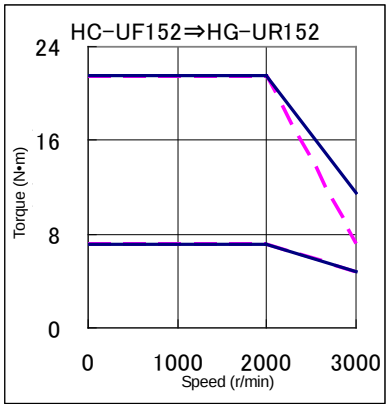


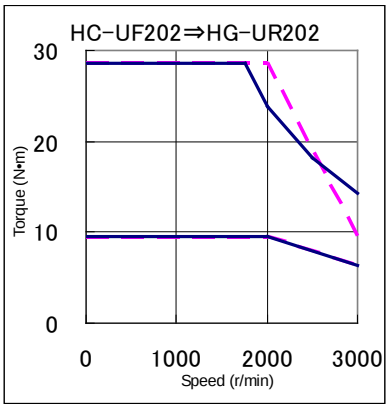


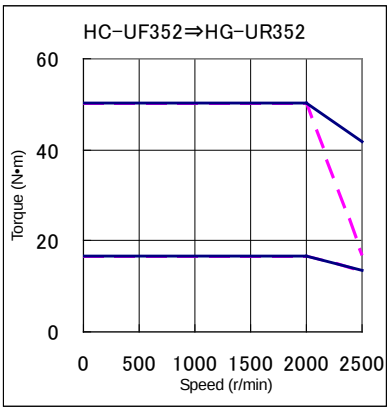
Note 1: The above torque characteristics are for three-phase 200 VAC.

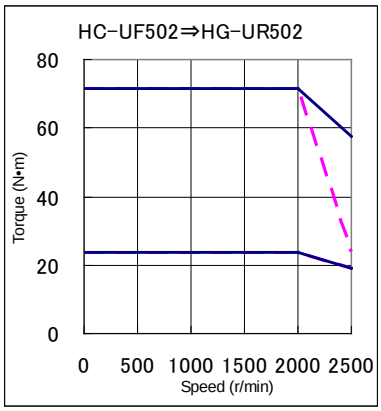
◆ Comparison of torque characteristics between the HG-UR and HC-UF series (——: HG-UR, - - - - : HC-UF)



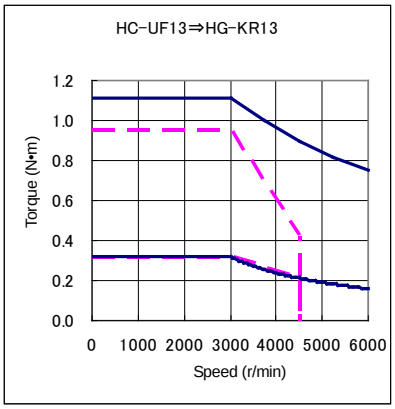


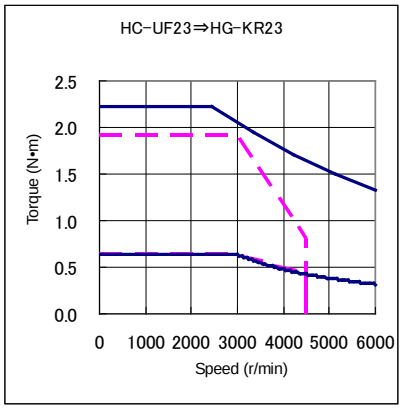


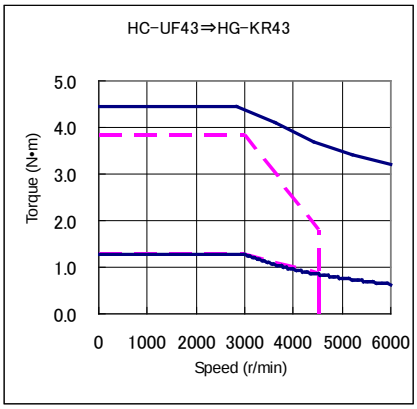


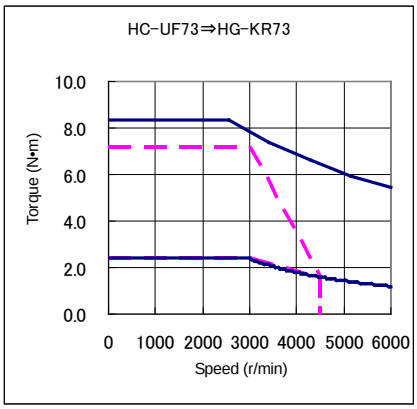


◆ Comparison of torque characteristics between the HG-KR and HC-UF series (—— : HG-KR, - - - - : HC-UF)



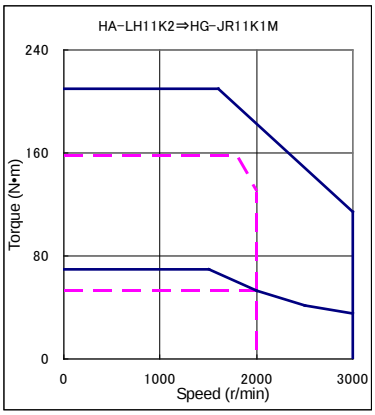


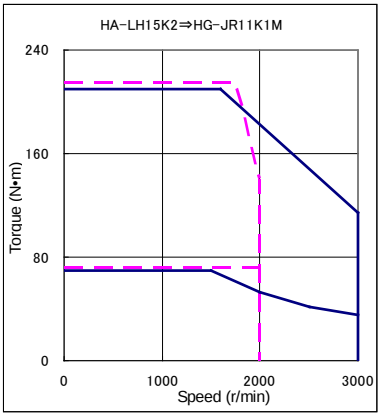


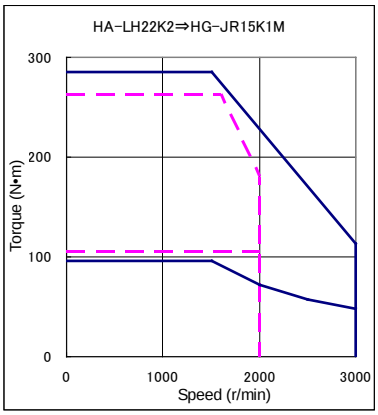


Note 1: The above torque characteristics are for three-phase 200 VAC.

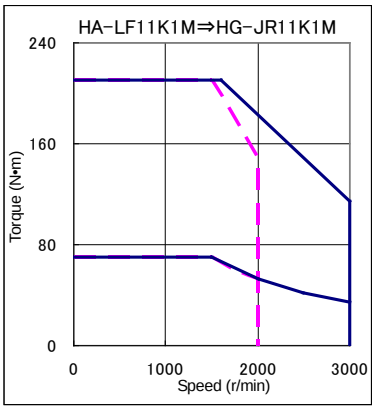
◆ Comparison of torque characteristics between the HG-JR and HA-LH series (—— : HG-JR, - - - - : HA-LH)

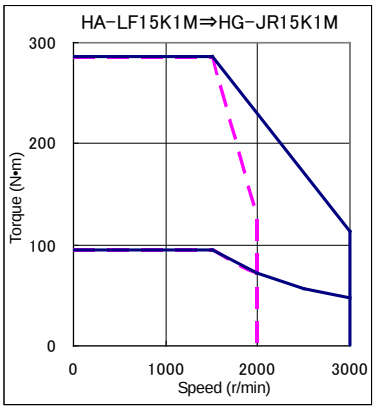


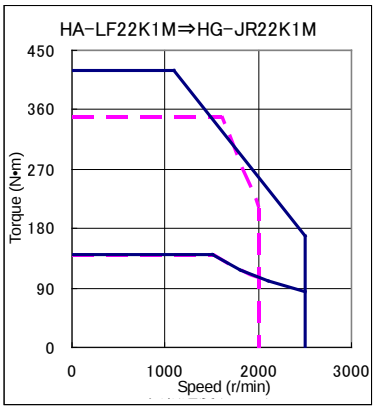




◆ Comparison of torque characteristics between the HG-JR and HA-LF series (—— : HG-JR, - - - - : HA-LF)







Note 1: The above torque characteristics are for three-phase 200 VAC.

■ Regenerative options

<Combination and regenerative power for the MR-H series>

Servo amplifier model MR-H-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB								
		013 [52 Ω]	033 [52 Ω]	32 [40 Ω]	34 [26 Ω]	(Note 1) 54 [6.7 Ω]	30 [13 Ω]	31 [6.7 Ω]	(Note 1) 50 [13 Ω]	(Note 1) 51 [6.7 Ω]
10A(N)/B		10	30							
20A(N)/B		10	30							
40A(N)/B	50			300						
60A(N)/B	50			300						
100A(N)/B	80			300						
200A(N)/B	80				300	500				
350A(N)/B	130						300		500	
500A(N)/B	130						300		500	
700A(N)/B	170							300		500
11KA(N)/B										
15KA(N)/B										
22KA(N)/B										

Note 1: Be sure to install a cooling fan.

Servo amplifier model MR-H-	Built-in regenerative resistor [W]	External regenerative resistor (accessory) [W]	Permissible regenerative power of regenerative option [W] MR-RB		
			65 [8 Ω]	66 [5 Ω]	67 [4 Ω]
10A(N)/B					
20A(N)/B					
40A(N)/B	50				
60A(N)/B	50				
100A(N)/B	80				
200A(N)/B	80				
350A(N)/B	130				
500A(N)/B	130				
700A(N)/B	170				
11KA(N)/B		500 (800)	500 (800)		
15KA(N)/B		800 (1300)		800 (1300)	
22KA(N)/B		800 (1300)			800 (1300)

Note: The values in the parentheses are applied to when a cooling fan is installed.

Parameter settings (No. 2 for MR-H) may be required depending on the regenerative option model. Refer to the Instruction Manual for details.

<Combination and regenerative power for the MR-J4 series (replacement model)>

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	Permissible regenerative power of regenerative option [W] MR-RB								
		032 [40 Ω]	12 [40 Ω]	30 [13 Ω]	3N [9 Ω]	31 [6.7 Ω]	32 [40 Ω]	(Note 1) 50 [13 Ω]	(Note 1) 5N [9 Ω]	(Note 1) 51 [6.7 Ω]
10A/B		30								
20A/B	10	30	100							
40A/B	10	30	100							
60A/B	10	30	100							
70A/B	20	30	100				300			
100A/B	20	30	100				300			
200A/B	100			300				500		
350A/B	100				300				500	
500A/B	130					300				500
700A/B	170					300				500
11KA/B										
15KA/B										
22KA/B										

Servo amplifier model MR-J4-	Built-in regenerative resistor [W]	(Note 2) Standard accessories [External]	Permissible regenerative power of regenerative option [W] MR-RB		
			(Note 2) 5R [3.2 Ω]	(Note 2) 9F [3 Ω]	(Note 2) 9T [2.5 Ω]
10A/B					
20A/B	10				
40A/B	10				
60A/B	10				
70A/B	20				
100A/B	20				
200A/B	100				
350A/B	100				
500A/B	130				
700A/B	170				
11KA/B		500 (800)	500 (800)		
15KA/B		850 (1300)		850 (1300)	
22KA/B		850 (1300)			850 (1300)

Note 1: Be sure to install a cooling fan.

Note 2: The values in the parentheses are applied to when a cooling fan is installed.

Items that differ from MR-H series are shown with shading.

Parameter settings (PA02 for MR-J4) may be required depending on the regenerative option model. Refer to the Instruction Manual for details.

■ Cable/connector option

Application		MR-H series	MR-J4 series	Compatibility	Precautions
Encoder cable		MR-JCCBL□M-□	MR-J3ENCBL□M-A□-□	Note 1	Connector shape will be changed. Cable must be changed. □M: Cable length A□: Leading direction -□: Bending life
			MR-J3JCBL03M-A□-L	Note 1	
			MR-EKCBL□M-□	Note 1	
			MR-J3JSCBL03M-A□-L	Note 1	
		MR-HSCBL□M-□	MR-J3ENSCBL□M-□	Note 1	
			MR-J3ENECBL□M-H-(MTH)	Note 1	(MTH) is required for MR-J4-22K□. □: Cable length
Encoder connector set		MR-J2CNM MR-HCNM	MR-ECNM	Note 1	Connector shape will be changed. Cable must be changed.
		MR-JSCNS MR-EN1CNS	MR-J3SCNS	Note 1	
			MR-ENCNS2	Note 1	
			MR-J3SCNSA	Note 1	
			MR-ENCNS2A	Note 1	
			MR-ENECNS	Note 1	
SSCNET communication cable		MR-HBUS□M	MR-J3BUS□M	Note 1	Connector will be changed due to change from metal communication to optical communication. □M: Cable length -□: Bending life
		MR-J2HBUS□M-A	MR-J3BUS□M-□	Note 1	
SSCNET communication connector set		-	MR-J3BCN1	Note 1	
Junction terminal block cable	A type for CN1	-	MR-J2M-CN1TBL□M	Note 1	□: Cable length
Connector set		-	MR-J3CN1	Note 1	
Junction terminal block		-	MR-TB50	Note 1	
Junction terminal block cable	B type for CN3	-	MR-J2HBUS□M	Note 1	□: Cable length
Connector set		-	MR-CCN1	Note 1	
Servo motor power cable		-	MR-PWS1CBL□M-A□-□	Note 1	□M: Cable length A□: Leading direction -□: Bending life
		-	MR-PWS2CBL03M-A□-L	Note 1	
Power connector set (Servo motor side power connector)		MR-PWCNS1	MR-PWCNS4	Note 1	Connector shape will be changed.
		MR-PWCNS2	MR-PWCNS5	Note 1	
		MR-PWCNS3	←	-	
Electromagnetic brake cable		-	MR-BKS1CBL□M-A□-□	Note 1	□M: Cable length A□: Leading direction -□: Bending life
		-	MR-BKS2CBL03M-A□-L	Note 1	
Electromagnetic brake connector set		MR-BKCN	MR-BKCNS1	Note 1	One-touch connection type will be added (straight type).
			MR-BKCNS2	Note 1	Screw type will be added (straight type).
			MR-BKCNS1A	Note 1	One-touch connection type will be added (angle type).
			MR-BKCNS2A	Note 1	Screw type will be added (angle type).
			←	-	Nothing will be changed.
Servo amplifier power connector (to 1 kW)	CNP1	-	06JFAT-SAXGDK-H7.5	Note 1	The round crimp terminal will be replaced with the connector.
	CNP2		05JFAT-SAXGDK-H5.0	Note 1	
	CNP3		03JFAT-SAXGDK-H7.5	Note 1	
Servo amplifier power connector (2 kW)	CNP1		06JFAT-SAXGFK-XL	Note 1	
	CNP2		05JFAT-SAXGDK-H5.0	Note 1	
	CNP3		03JFAT-SAXGFK-XL	Note 1	
Servo amplifier power connector (3.5 kW)	CNP1		06JFAT-SAXGFK-XL	Note 1	
	CNP2		05JFAT-SAXGDK-H5.0	Note 1	
	CNP3		03JFAT-SAXGFK-XL	Note 1	
CN5 communication cable		MR-HPC98CBL3M	MR-J3USBCBL3M	Note 1	Change from RS-232C communication to USB communication.
		MR-HPCATCBL3M			

Note 1: These replacement models do not have compatibility in mounting.

3. COMPARISON OF FUNCTIONS

Item		MR-H series	MR-J4 series
1	Capacity range	0.1 kW to 22 kW/200 V	0.1 kW to 22 kW/200 V
2	Internal regenerative resistor	Built-in (0.2 kW to 7 kW) External (11 kW to 22 kW)	Built-in (0.2 kW to 7 kW) External (11 kW to 22 kW)
3	Dynamic brakes	Built-in (0.1 kW to 7 kW) External (11 kW to 22 kW)	Built-in (0.1 kW to 7 kW) External (11 kW to 22 kW) Coasting distance is different.
4	Control circuit power	1-phase 200 V AC to 230 VAC	1-phase 200 VAC to 240 VAC
5	Main circuit power	3-phase 200 VAC to 230 VAC, 50/60 Hz (to 5 kW) 3-phase 200 VAC to 220 VAC, 50 Hz (1 kW to 22 kW) 3-phase 200 VAC to 230 VAC, 60 Hz (1 kW to 22 kW)	1-phase/3-phase 200 VAC to 240 VAC, 50/60 Hz (to 750 W) 3-phase 200 VAC to 240 VAC, 50/60 Hz (1 kW to 22 kW)
6	24 V DC power	External supply required	External supply required
7	Auto tuning	Real-time auto tuning: 5 steps	Real-time auto tuning: 40 steps One-touch tuning
8	Control mode	(A) General-purpose interface • Position control mode (pulse command) • Speed control mode (analog command) • Torque control mode (analog command) (B) SSCNET interface (5.6 Mbps) • Position control mode • Speed control mode	(A) General-purpose interface • Position control mode (pulse command) • Speed control mode (analog command) • Torque control mode (analog command) (B) SSCNET III/H interface (150 Mbps) • Position control mode, Speed control mode • Torque control mode
9	Maximum input pulses	Differential pulse 400 kpps Command pulse: Sink interface	Differential pulse 4 Mpps Command pulse: Sink interface
10	The number of DIO points (excluding EM1)	(A) General-purpose interface DI: 8 points, DO: 6 points (B) SSCNET interface DI: 0 points, DO: 2 points	(A) General-purpose interface DI: 9 points, DO: 6 points (B) SSCNET III/H interface DI: 3 points, DO: 3 points
11	Encoder pulse output	ABZ-phase (differential) General-purpose interface Z-phase (open collector)	ABZ-phase (differential) General-purpose interface Z-phase (open collector)
12	DIO interface	Input/output: Sink interface/Source interface	Input/output: Sink interface/Source interface
13	Analog input/output	(A) General-purpose interface (Input) 2ch 10-bit torque, 14-bit speed or equivalent (Output) 10-bit or equivalent × 2ch (B) SSCNET III interface (Output) 10-bit or equivalent × 2ch	(A) General-purpose interface (Input) 2ch 10-bit torque, 14-bit speed or equivalent (Output) 10-bit or equivalent × 2ch (B) SSCNET III/H interface (Output) 10-bit or equivalent × 2ch
14	The number of internal speed commands (Type A)	7 points	7 points
15	Parameter setting method	Setup software Push-button (Type A)	MR Configurator2 Push-button (Type A)
16	Setup S/W communication	RS232C	USB
17	Servo motor (Encoder resolution)	HA series (13 bit ABS)	HG series (22 bit ABS)
18	Servo motor maximum torque	HA-FH 300%	HG-KR 350%
		HA-MH 300%	HG-MR 300%
		HA-SH 300%	HG-SR 300%
		HA-UH 300%	HG-UR 300%
		HA-LH 300%	HG-JR 300%
19	Button (Type A)	Unprovided	Four buttons
20	LED display	(Type A) 7-segment 4-digit (Type B) 7-segment 4-digit	(Type A) 7-segment 5-digit (Type B) 7-segment 3-digit
21	Advanced vibration suppression control	Unprovided	Provided (II 3-inertia vibration suppression)
22	Adaptive filter II	Unprovided	Provided
23	Notch filter	Provided (1 pc.)	Provided (5 pcs.)
24	Tough drive	Unprovided	Provided
25	Drive recorder	Unprovided	Provided
26	Forced stop	EM1 (DB stop)	Select EM1 (DB stop) or EM2 (deceleration to a stop)
Note		Changed items are shown with shading.	

4. COMPARISON OF NETWORKS

<Comparison of servo system network specifications>

<table>
<tr><td rowspan="2">Item</td><td>MR-H series</td><td rowspan="8">→</td><td colspan="2">MR-J4 series (note 1)</td></tr>
<tr><td>SSCNET</td><td>SSCNET III</td><td>SSCNET III/H</td></tr>
<tr><td>Communication media</td><td>Metal cable</td><td colspan="2">Optical fiber cable</td></tr>
<tr><td>Communication speed</td><td>5.6 Mbps</td><td>50 Mbps</td><td>150 Mbps</td></tr>
<tr><td rowspan="2">Transmission distance</td><td rowspan="2">Overall length: 30 m</td><td colspan="2">[Standard cord inside cabinet/standard cable outside cabinet]
Maximum distance between stations: 20 m
Maximum overall distance: 320 m
(20 m × 16 axes)</td></tr>
<tr><td>[Long distance cable]
Maximum distance between stations: 50m
Maximum overall distance: 800m
(50 m × 16 axes)</td><td>[Long distance cable]
Maximum distance between stations: 100m
Maximum overall distance: 1600m
(100 m × 16 axes)</td></tr>
</table>

Note 1: If the first controller communication is connected using SSCNET III/H in the factory setting, the operation mode will be fixed to the "J4 mode". If using SSCNET III, the mode will be fixed to "J3 compatible mode". To return to the factory setting or to select an arbitrary mode, change the setting with the application "MR-J4(W)-B mode selection".

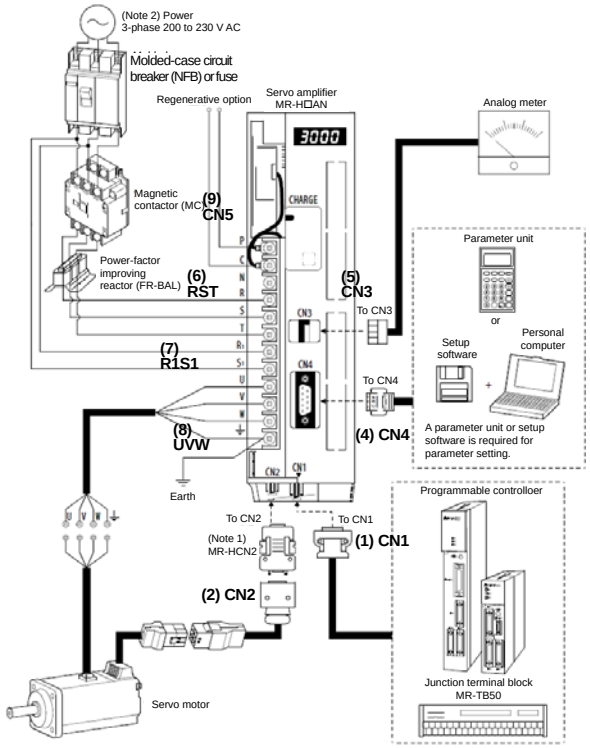
The application "MR-J4(W)-B mode selection" is available with MR Configurator2 Version 1.12N and later. If MR Configurator2 Version earlier than 1.12N is used, please download an update from the Mitsubishi Electric FA Site.

5. EXAMPLES OF CONNECTIONS FOR REPLACEMENT

Comparison of MR-H-A and MR-J4-A

An example of connections with the peripheral equipment is shown below. Refer to the respective Instruction Manuals for details on the signals.

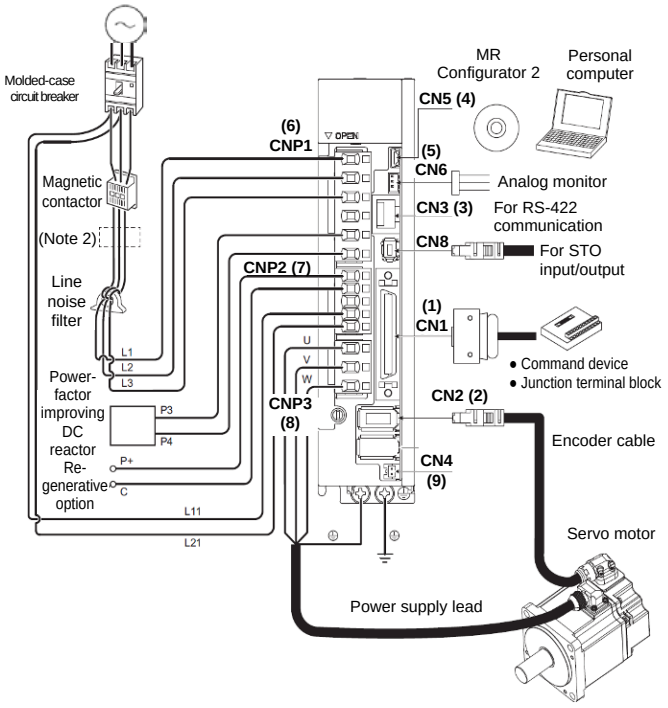
MR-H-A



Note 1: The above configuration example is applied to the MR-H-350AN or less capacities.

Note 2: The power factor improving AC reactor can also be used. In that case, the power factor improving DC reactor cannot be used.

MR-J4-A



Note 1: The above configuration example is applied to the MR-J4-200A or less capacities.

Note 2: The power factor improving AC reactor can also be used. In that case, the power factor improving DC reactor cannot be used.

- List of connector and terminal block correspondence

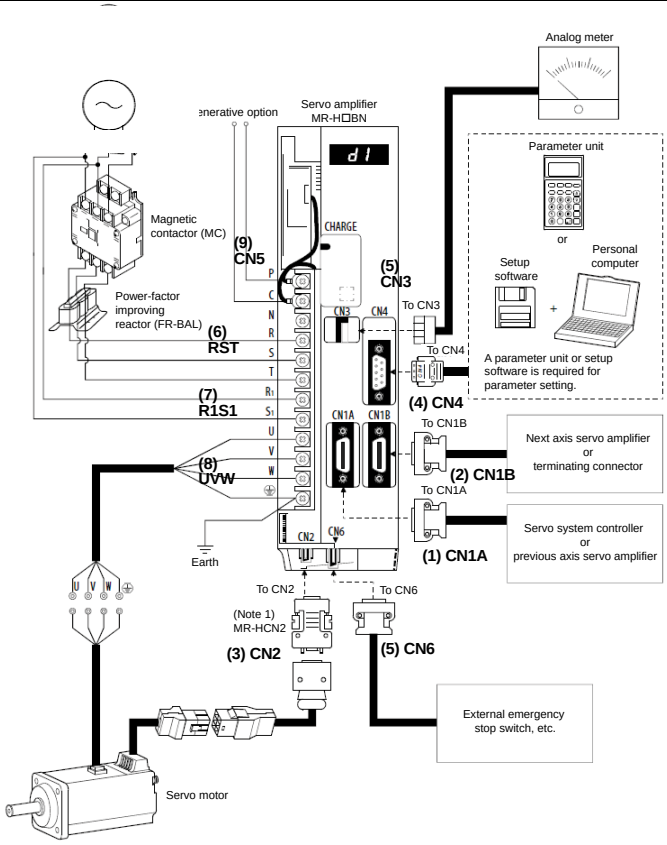
	MR-H-A		MR-J4-A	Precautions
(1)	I/O signal connector CN1		I/O signal connector CN1	Must fabricate a new I/O signal cable.
(2)	Encoder connector CN2		Encoder connector CN2	Must fabricate a new encoder cable.
(3)			RS-422 connector CN3	Must fabricate a new RS-422 communication cable.
(4)	RS-232C communication connector CN4		USB communication connector CN5	Must fabricate a new USB cable.
(5)	Analog monitor connector CN3	→	Analog monitor connector CN6	
(6)	Main circuit power terminal block R, S, T		Main circuit power connector CNP1	Must switch to power connector (enclosed with amplifier).
(7)	Control circuit terminal block R1, S1		Control circuit power connector CNP2	
(8)	Servo motor power terminal block UVW		Servo motor power connector CNP3	
(9)	Battery connector CN5		Battery connector CN4	Must fabricate a new battery.

Note: When not using the STO function, attach a short-circuit connector supplied with a servo amplifier onto CN8 (STO input signal connector).

Comparison of MR-H-B and MR-J4-B

An example of connections with the peripheral equipment is shown below. Refer to the respective Instruction Manuals for details on the signals.

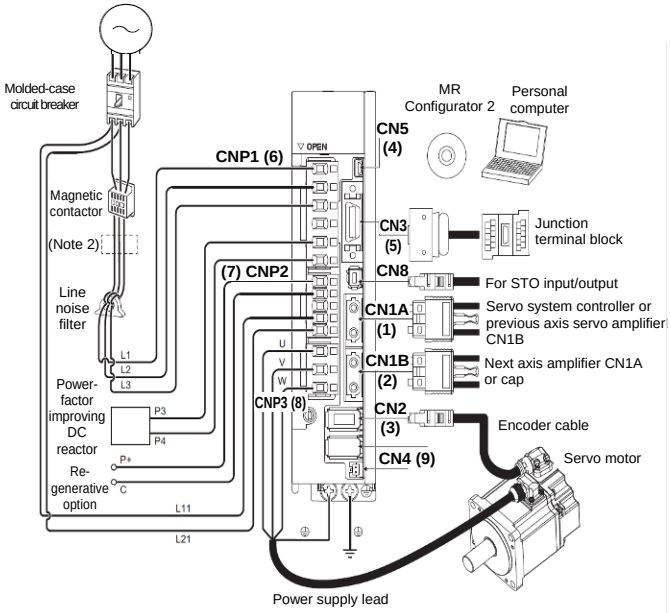
MR-H-B



Note 1: The above configuration example is applied to the MR-H-350B or less capacities.

Note 2: The power factor improving AC reactor can also be used. In that case, the power factor improving DC reactor cannot be used.

MR-J4-B



Note 1: The above configuration example is applied to the MR-J4-200B or less capacities.

Note 2: The power factor improving AC reactor can also be used. In that case, the power factor improving DC reactor cannot be used.

- List of connector and terminal block correspondence

	MR-H-B		MR-J4-B	Precautions
(1)	SSCNET cable connection connector CN1A		SSCNET III cable connection connector CN1A	
(2)	SSCNET cable connection connector CN1B		SSCNET III cable connection connector CN1B	
(3)	Encoder connector CN2		Encoder connector CN2	
(4)	RS-232C communication connector CN4		USB communication connector CN5	
(5)	I/O signal connector CN6 Analog monitor connector CN3	→	I/O signal connector CN3	
(6)	Main circuit power terminal block R, S, T		Main circuit power connector CNP1	Must switch to power connector (enclosed with amplifier).
(7)	Control circuit terminal block R1, S1		Control circuit power connector CNP2	
(8)	Servo motor power terminal block UVW		Servo motor power connector CNP3	
(9)	Battery connector CN5		Battery connector CN4	Must fabricate a new battery.

Note: When not using the STO function, attach a short-circuit connector supplied with a servo amplifier onto CN8 (STO input signal connector).

6. COMPARISON OF PARAMETERS

The correspondence of the MR-H series and MR-J4 series parameter numbers is shown below. Refer to the respective Instruction Manuals for detailed specifications of each parameter.

Comparison of MR-H-A and MR-J4-A

With MR-J4-A, the forced stop deceleration function is enabled in the factory setting. To disable the deceleration to a stop function, set PA04 to "0□□□".

MR-H-A (N)		MR-J4-A		Precautions
No.	Name	No.	Name	
0	Motor series			No corresponding parameter.
1	Motor type			No corresponding parameter.
2	Control mode selection	PA01	Operation mode	
	Select the regenerative brake option.	PA02	Regenerative option	
3	Absolute position detection system selection	PA03	Absolute position detection system	
	Select the CN1-48 (ALM) output signal.			No corresponding parameter (Can substitute with PD23 to PD28.)
	Select the electromagnetic brake interlock signal or zero speed detection signal. (CN1-23 changes the function.)			
	Pulse train input type selection			No corresponding parameter (MR-J4-A supports the open-collector type and operation line driver type. However, parameter setting is not required.)
4	Electronic gear numerator	PA06	Electronic gear numerator (command pulse multiplication numerator)	The setting value must be changed according to encoder resolution.
5	Electronic gear denominator	PA07	Electronic gear denominator (command pulse multiplication denominator)	The setting value must be changed according to encoder resolution.
6	In-position range	PA10	In-position range	
7	Position loop gain 1	PB07	Model loop gain	For MR-J4-A, settings up to one decimal place are available.
8	Position command acceleration/deceleration time constant			No corresponding parameter
9	Internal speed command 1	PC05	Internal speed command 1	
	Internal speed limit 1		Internal speed limit 1	
10	Internal speed command 2	PC06	Internal speed command 2	
	Internal speed limit 2		Internal speed limit 2	
11	Internal speed command 3	PC07	Internal speed command 3	
	Internal speed limit 3		Internal speed limit 3	
12	Acceleration time constant	PC01	Acceleration time constant	
13	Deceleration time constant	PC02	Deceleration time constant	
14	S-pattern acceleration/deceleration time constant	PC03	S-pattern acceleration/deceleration time constant	
15	Torque command time constant	PC04	Torque command time constant	
16	Torque limit time constant			No corresponding parameter
17	Analog monitor output	PC14	Analog monitor 1 output	The setting value must be changed according to monitor output data.
		PC15	Analog monitor 2 output	
18	Status display selection	PC36	Status display selection	The setting value must be changed according to status display.
19	Parameter write disable	PA19	Parameter writing inhibit	Change the setting value as necessary.
20	Servo-lock selection	PC23	Servo-lock selection at speed control stop	
	Response setting (when auto tuning is valid)	PA09	Auto tuning response	The setting value must be changed based on machine resonance frequency.
	Automatic restart after instantaneous power failure (speed control mode)			Available in the future.

<table>
<tr><th colspan="2">MR-H-A (N)</th><th colspan="2">MR-J4-A</th><th rowspan="2">Precautions</th></tr>
<tr><th>No.</th><th>Name</th><th>No.</th><th>Name</th></tr>
<tr><td></td><td>Auto tuning selection</td><td>PA08</td><td>Auto tuning mode</td><td>The setting value must be changed according to auto tuning mode.<table><tr><th>MR-H-A</th><th>MR-J4-A</th></tr><tr><td>When using such controls as interpolation axis control for position control</td><td>2 gain adjustment mode 1 (interpolation mode)</td></tr><tr><td>Auto tuning in normal condition</td><td>Auto tuning mode 1</td></tr><tr><td></td><td>Auto tuning mode 2</td></tr><tr><td>Disabled</td><td>Manual mode</td></tr><tr><td></td><td>2 gain adjustment mode 1 (interpolation mode)</td></tr></table></td></tr>
<tr><td rowspan="2">21</td><td>Command pulse logic selection</td><td rowspan="2">PA13</td><td rowspan="2">Command pulse input form</td><td rowspan="2">Items to be selected are different.</td></tr>
<tr><td>Command pulse input form selection</td></tr>
<tr><td></td><td>Low acoustic noise mode selection</td><td></td><td></td><td>No corresponding parameter</td></tr>
<tr><td>22</td><td>Stopping pattern when LSP/LSN signal is turned off</td><td>PD30</td><td>Stop method selection for LSP/LSN off</td><td></td></tr>
<tr><td>23</td><td>Feed forward gain</td><td>PB04</td><td>Feed forward gain</td><td></td></tr>
<tr><td>24</td><td>Electronic gear numerator 2</td><td>PC32</td><td>Command pulse multiplication numerator 2</td><td></td></tr>
<tr><td>25</td><td>Electronic gear numerator 3</td><td>PC33</td><td>Command pulse multiplication numerator 3</td><td></td></tr>
<tr><td>26</td><td>Electronic gear numerator 4</td><td>PC34</td><td>Command pulse multiplication numerator 4</td><td></td></tr>
<tr><td rowspan="2">27</td><td rowspan="2">Excessive error alarm level</td><td>PC43</td><td>Error excessive alarm level</td><td rowspan="2">The unit for setting is different.
(kpulse → Set the number per unit rev./mm in PC24.)</td></tr>
<tr><td>PC24</td><td>Error excessive alarm level unit selection</td></tr>
<tr><td>28</td><td>Second acceleration time constant</td><td>PC30</td><td>Acceleration time constant 2</td><td></td></tr>
<tr><td>29</td><td>Second deceleration time constant</td><td>PC31</td><td>Deceleration time constant 2</td><td></td></tr>
<tr><td rowspan="2">30</td><td>Internal speed command 4</td><td rowspan="2">PC08</td><td>Internal speed command 4</td><td></td></tr>
<tr><td>Internal speed limit 4</td><td>Internal speed limit 4</td><td></td></tr>
<tr><td rowspan="2">31</td><td>Internal speed command 5</td><td rowspan="2">PC09</td><td>Internal speed command 5</td><td></td></tr>
<tr><td>Internal speed limit 5</td><td>Internal speed limit 5</td><td></td></tr>
<tr><td rowspan="2">32</td><td>Internal speed command 6</td><td rowspan="2">PC10</td><td>Internal speed command 6</td><td></td></tr>
<tr><td>Internal speed limit 6</td><td>Internal speed limit 6</td><td></td></tr>
<tr><td rowspan="2">33</td><td>Internal speed command 7</td><td rowspan="2">PC11</td><td>Internal speed command 7</td><td></td></tr>
<tr><td>Internal speed limit 7</td><td>Internal speed limit 7</td><td></td></tr>
<tr><td>34</td><td>Zero speed</td><td>PC17</td><td>Zero speed</td><td></td></tr>
<tr><td>35</td><td>Speed at the analog speed command of max. input voltage</td><td>PC12</td><td>Analog speed command - Maximum speed/Analog speed limit - Maximum speed</td><td></td></tr>
<tr><td>36</td><td>VC speed command averaging</td><td>PC23</td><td>VC/VLA voltage averaging selection</td><td></td></tr>
<tr><td>37</td><td>Analog torque command full scale</td><td>PC13</td><td>Analog torque command maximum output</td><td>For MR-J4-A, settings up to one decimal place are available.</td></tr>
<tr><td>38</td><td>For manufacturer setting</td><td></td><td></td><td></td></tr>
<tr><td>39</td><td>Encoder output pulse</td><td>PA15</td><td>Encoder output pulse</td><td>Max. output frequency is different.</td></tr>
<tr><td rowspan="2">40</td><td rowspan="2">Internal torque limit 1</td><td>PA11</td><td>TLP Forward rotation torque limit</td><td rowspan="2">For MR-J4-A, settings up to one decimal place are available.</td></tr>
<tr><td>PA12</td><td>TLN Reverse rotation torque limit</td></tr>
<tr><td rowspan="4">41</td><td>C1-37 pin (CR) function changing</td><td></td><td></td><td>No corresponding parameter
(Can substitute with PD03 to PD13.)</td></tr>
<tr><td>Clear signal (CR) function selection</td><td>PD32</td><td>CR (clear) selection</td><td></td></tr>
<tr><td>Internal 7-speed setting</td><td>PD03 to PD22</td><td>Input device selection</td><td>For MR-J4-A, internal 7-speed setting selection is available by assigning SP3 in any of the parameters on the left side.</td></tr>
<tr><td>Electronic gear 4-step switching</td><td>PA21</td><td>Electronic gear selection</td><td></td></tr>
<tr><td>42</td><td>Reverse rotation stroke end signal (LSN) input selection</td><td>PD01</td><td>Input signal automatic on selection 1
LSN (Reverse rotation stroke end)</td><td></td></tr>
</table>

MR-H-A (N)		MR-J4-A		Precautions
No.	Name	No.	Name	
	Forward rotation stroke end signal (LSP) input selection		Input signal automatic on selection 1 LSP (Forward rotation stroke end)	
	Servo on signal (SON) input selection		Input signal automatic on selection 1 SON (Servo-on)	
	External torque limit (TL) switch-over function selection		Input signal automatic on selection 1 TL (External torque limit selection)	
43	Encoder output setting method selection	PC19	Encoder output pulse setting selection	
	Machine speed (status display) unit selection			No corresponding parameter
44	Electromagnetic brake interlock timing	PA04	Servo forced stop selection and forced stop deceleration function selection	
	Pre-alarm output selection	PD34	Selection of output device at warning occurrence	For MR-J4-A, the ALM output status can be selected when a warning occurs.
	Alarm code output selection	PD34	Alarm code output	
45	Machine speed conversion constant			No corresponding parameter
46	Pre-alarm data selection			No corresponding parameter (MR-J4-B has a drive recorder function.)
47	VC offset	PC37	Analog speed command offset/ Analog speed limit offset	
48	TLAP offset	PC38	Analog torque command offset/ Analog torque limit offset	
49	TLAN offset			
50	Analog monitor 1 offset	PC39	Analog monitor 1 offset	
51	Analog monitor 2 offset	PC40	Analog monitor 2 offset	
52	For manufacturer setting			
53	Electromagnetic brake sequence output	PC16	Electromagnetic brake sequence output	
54	Internal torque limit 2	PC35	TL2 internal torque limit 2	
55	For manufacturer setting			
56	DI signal filter	PD29	Input signal filter selection	
57	For manufacturer setting			
58	Ratio of load inertia moment to motor inertia moment	PB06	Load to motor inertia ratio	
59	Machine resonance suppression filter	PB13	Machine resonance suppression filter 1	Change the setting value according to the frequency and depth.
		PB14	Notch shape selection 1	
60	Position loop gain 2	PB08	Position loop gain	For MR-J4-A, settings up to one decimal place are available.
61	Speed loop gain 1			No corresponding parameter (Setting not required)
62	Speed loop gain 2	PB09	Speed loop gain	For MR-J4-A, settings up to one decimal place are available.
63	Speed integral compensation	PB10	Speed integral compensation	For MR-J4-A, settings up to one decimal place are available.
64	Speed differential compensation	PB11	Speed differential compensation	
65	For option card MR-H-E02			No corresponding parameter
66				
67				
68	For manufacturer setting			
69	For manufacturer setting			
70	Input signal selection			
71	Output signal selection			
72	Auxiliary pulse form selection			
73	Auxiliary pulse input electronic gear numerator			
74	Auxiliary pulse input electronic gear denominator			
75 to 79	For manufacturer setting			

Comparison of MR-H-B and MR-J4-B

With MR-J4-B, the forced stop deceleration function is enabled in the factory setting. To disable the deceleration to a stop function, set PA04 to "0□□□".

MR-H-B (N)		MR-J4-B		Precautions
No.	Name	No.	Name	
1	Amplifier setting	PA03	Absolute position detection system	
2	Regenerative brake resistor	PA02	Regenerative option	
3	Motor type			No corresponding parameter (Setting not required)
4	Motor capacity			No corresponding parameter (Setting not required)
5	Servo motor speed			No corresponding parameter (Setting not required)
6	Feedback pulse			No corresponding parameter (Setting not required)
7	Rotation direction	PA14	Rotation direction selection	
8	Auto tuning	PA08	Auto tuning mode	The setting value must be changed according to auto tuning mode. MR-H-B (B) / MR-J4-B When using such controls as interpolation axis control for position control / 2 gain adjustment mode 1 (interpolation mode) Auto tuning in normal condition / Auto tuning mode 1 / Auto tuning mode 2 Disabled / Manual mode / 2 gain adjustment mode 1 (interpolation mode)
9	Servo response setting	PA09	Auto tuning response	The setting value must be changed based on machine resonance frequency.
10	Forward rotation torque limit			No corresponding parameter
11	Reverse rotation torque limit			No corresponding parameter
12	Ratio of load inertia moment to servo motor inertia moment (load inertia ratio)	PB06	Load to motor inertia ratio	
13	Position loop gain 1	PB07	Model loop gain	
14	Speed loop gain 1			No corresponding parameter (Setting not required)
15	Position loop gain 2	PB08	Position loop gain	
16	Speed loop gain 2	PB09	Speed loop gain	
17	Speed integral compensation	PB10	Speed integral compensation	
18	Machine resonance suppression filter (notch filter)	PB13	Machine resonance suppression filter 1	Change the setting value according to the frequency and depth.
		PB14	Notch shape selection 1	
19	Feed forward gain	PB04	Feed forward gain	
20	In-position range	PA10	In-position range	
21	Electromagnetic brake sequence output	PC02	Electromagnetic brake sequence output	
22	Monitor output mode	PC09	Analog monitor 1 output	The setting value must be changed according to monitor output data.
		PC10	Analog monitor 2 output	
23	Optional function 1 Low acoustic noise mode selection			No corresponding parameter
24	Electromagnetic brake interlock output timing	PA04	Servo forced stop selection and forced stop deceleration function selection	
	Selection of motor-less operation	PC05	Motor-less operation selection	
25	For manufacturer setting			
26	For manufacturer setting			
27	Analog monitor 1 offset	PC11	Analog monitor 1 offset	
28	Analog monitor 2 offset	PC12	Analog monitor 2 offset	

MR-H-B (N)		MR-J4-B		Precautions
No.	Name	No.	Name	
29	Pre-alarm data selection			No corresponding parameter (MR-J4-B has a drive recorder function.)
30	Zero speed	PC07	Zero speed	
31	Error excessive alarm level	PC01	Error excessive alarm level	The unit for setting is different. (kpulse → Set the number per unit rev./mm in PC24.)
		PC06	Error excessive alarm level unit selection	
32	PI-PID control switch-over	PB24	PI-PID switching control selection	
33	For manufacturer setting			
34	PI-PID control switch-over position droop			No corresponding parameter
35	For manufacturer setting			
36	Speed differential compensation	PB11	Speed differential compensation	
37	For manufacturer setting			
38	For manufacturer setting			
39	For manufacturer setting			
40	Parameter write inhibit	PA19	Parameter writing inhibit	Change the setting value as necessary.